## **APPENDIX H**

RESIDENCES AND OTHER STRUCTURES WITHIN 50 FEET OF THE CONSTRUCTION WORK AREA AND RESIDENTIAL CONSTRUCTION PLANS

## APPENDIX H

Desidences	and Other Street	TABLE		ouls Augo for the Alas	l Drainet
Facility, County, State, Municipality	Milepost	Type of Structure	Approx. Distance from Construction Work Area (feet)	Approx. Distance from Pipeline Centerline (feet)	Residential Drawing Number <sup>a</sup>
HAVERSTRAW TO STONY	· · · · · · · · · · · · · · · · · · ·	•			
Rockland County, NY					
Haverstraw	0.38	Residential	5	15	HA-E-7001
	0.40	Residential	22	42	HA-E-7001
	0.42	Residential	25	46	HA-E-7001
	0.44	Residential	46	66	HA-E-7002
	0.47	Residential	3	23	HA-E-7002
	0.50	Residential	14	34	HA-E-7002
	0.57	Residential	44	64	HA-E-7003
	1.01	Residential	10	83	HA-E-7004
	1.04	Res./Comm.	9	108	HA-E-7004
	1.10	Residential	0	20	HA-E-7004
	1.11	Residential	0	18	HA-E-7004
	1.11	Residential	0	18	HA-E-7004
	1.12	Residential	0	20	HA-E-7004
	1.13	Residential	35	90	HA-E-7004
	1.13	Residential	2	22	HA-E-7005
	1.14	Residential	40	117	HA-E-7005
	1.14	Residential	43	99	HA-E-7005
	1.15	Residential	0	92	HA-E-7005
	1.15	Residential	0	32	HA-E-7005
	1.16	Residential	25	82	HA-E-7005
Stony Point	1.7	Residential	26	69	HA-E-7006
otony i omi	2.02	Residential	15	35	HA-E-7007
	2.1	Residential	10	16	HA-E-7007
	2.23	Residential	17	62	HA-E-7008
	2.25	Residential	35	55	HA-E-7008
	2.26	Residential	49	104	HA-E-7008
	2.29	Residential	14	55	HA-E-7008
	2.30	Residential	28	48	HA-E-7008
	2.34	Residential	31	86	HA-E-7008
	2.35	Residential	0	18	HA-E-7008
	2.41	Residential	12	54	HA-E-7009
	2.42	Residential	17	37	HA-E-7009
	2.82	Residential	50	116	HA-E-7010
	3.14	Radio Tower Facility	10	75	NA
STONY POINT TO YORKT	OWN TAKE-UP AI				
Rockland County, NY					
Stony Point	0.41	Res./Comm.	14	75	S7-E-7001
•	0.42	Residential	58	159	S7-E-7001
	0.42	Res./Comm.	40	114	S7-E-7002
	0.60	Shed	0	11	S7-E-7003
	0.61	Shed	29	54	S7-E-7003
	0.61	Residential	44	69	S7-E-7003

Residences and	d Other Structu	TABLE H-1	` ,	ork Area for the AIM	l Project
Facility, County, State, Municipality	Milepost	Type of Structure	Approx. Distance from Construction Work Area (feet)	Approx. Distance from Pipeline Centerline (feet)	Residential Drawing
	0.62	Residential	48	123	S7-E-7003
	0.65	Residential	24	99	S7-E-7003
	0.67	Residential	15	35	S7-E-7003
	1.48	Garage	12	62	NA NA
	1.68	Residential	43	68	S7-E-7004
	1.77	Shed	18	43	S7-E-7005
	1.79	Residential	24	49	S7-E-7005
	2.09	Shed	27	47	NA
	2.10	Shed/Pool	9	29	S7-E-7006
	2.11	Residential	1	19	S7-E-7006
	2.11	Residential	46	101	S7-E-7006
	2.17	Residential	9	64	S7-E-7006
	2.17		9 37	68	S7-E-7006 S7-E-7006
		Residential			
	2.29	Residential	10	30	S7-E-7007
	2.33	Residential	12	67	S7-E-7007
	2.43	Residential	15	35	S7-E-7008
	3.08	Residential	41	76	S7-E-7009
Vestchester County, NY					
Buchanan	5.52	Garage	43	113	NA
	5.60	Commercial	42	77	NA
	5.69	Commercial	5	35	NA
	5.69	Commercial	5	70	NA
Peekskill	5.77	Commercial	5	20	S7-E-7010
	5.80	Commercial	15	75	S7-E-7010
	5.80	Shed	10	75	S7-E-7010
	5.80	Shed	10	65	S7-E-7010
	5.78	Residential	5	20	S7-E-7010
	5.80	Residential	48	101	S7-E-7010
Cortlandt	6.41	Residential	47	82	S7-E-7011
	6.53	Residential	42	107	S7-E-7011
	6.60	Residential	-14	30	S7-E-7012
	8.10	Barn	5	35	S7-E-7013
	8.10	Garage	38	103	S7-E-7013
	8.11	Residential	13	78	S7-E-7013
	8.12	Ranch/Residential	45	80	S7-E-7013
	8.33	Residential	30	65	S7-E-7014
	8.35	Garage	15	50	S7-E-7014
	8.95	Shed	26	124	NA
	8.98	Residential	18	38	S7-E-7015
	9.01	Residential	15	70	S7-E-7015 S7-E-7015
	9.03	Residential	10	30	S7-E-7015
	9.07	Residential	9	29	S7-E-7015
	9.16	Residential	27	82	S7-E-7016
	9.34	Residential	5	61	S7-E-7017
	9.38	Residential	43	63	S7-E-7017
	9.41	Residential	13	68	S7-E-7017
	9.45	Residential	27	47	S7-E-7017
	9.52	Garage	35	55	NA

Facility, County, State,			Approx. Distance from Construction	Approx. Distance from Pipeline	Residential Drawing
Municipality	Milepost	Type of Structure	Work Area (feet)	Centerline (feet)	Number <sup>a</sup>
	9.54	Residential	44	64	S7-E-7018
	9.58	Residential	18	73	S7-E-7018
	9.62	Residential	5	31	S7-E-7018
	9.65	Residential	25	80	S7-E-7018
	9.71	Residential	38	93	S7-E-7019
	9.75	Shed	14	34	S7-E-7019
	9.77	Residential	9	29	S7-E-7019
	9.78	Residential	18	106	S7-E-7019
	9.82	Residential	1	19	S7-E-7019
	9.83	Shed	0	20	S7-E-7020
	9.85	Residential	3	58	S7-E-7020
	9.89	Residential	30	85	S7-E-7020
	9.98	Residential	49	104	S7-E-7020
	10.00	Residential	36	56	S7-E-7021
	10.02	Residential	14	69	S7-E-7021
	10.03	Shed	30	85	S7-E-7021
	10.05	Residential	22	77	S7-E-7021
	10.08	Residential	0	20	S7-E-7021
	10.09	Residential	20	75	S7-E-7021
	10.11	Patio	15	35	S7-E-7021
	10.12	Residential	2	22	S7-E-7021
	10.18	Residential	16	71	S7-E-7022
	10.19	Residential	32	52	S7-E-7022
	10.29	Commercial	35	205	NA
	10.34	Commercial	42	204	NA
	10.36	Commercial	40	197	NA
	10.37	Commercial	38	137	NA
	10.38	Commercial	0	10	S7-E-7023
	10.38	Commercial	35	55	S7-E-7023
	10.40	Residential	40	95	S7-E-7023
	10.41	Commercial	5	25	S7-E-7023
	10.41	Residential	44	100	S7-E-7023
	10.41	Residential	5	60	S7-E-7023
	10.45	Garage	5	40	S7-E-7023
	10.67	Residential	6	17	S7-E-7024
	10.67	Residential	15	54	S7-E-7024
	10.07	Residential	2	53	S7-E-7024 S7-E-7024
	11.06	Residential	30	95	S7-E-7024 S7-E-7025
OUTHEAST TO MLV 19 TA			30	90	31-L-1020
airfield County, CT	INC-OF AND RE	LAI			
Danbury	0.58	Garage Entrance Ramp	20	55	NA
	1.30	Weigh Station	50	145	NA
	1.46	Commercial	18	107	NA
	1.40	Commercial	35	39	NA NA
	1.89	Commercial	30	130	NA NA
	1.09	Commercial	10	53	NA NA
	2.01	Commercial	5	32	NA NA

Residences and Ot Facility, County, State, Municipality	Milepost  2.04 2.20 2.18 2.34 2.38 2.42 2.42	Type of Structure Commercial Commercial Residential Residential Residential	Approx. Distance from Construction Work Area (feet) 50 12 46	Approx. Distance from Pipeline Centerline (feet)  80 75	Residential Drawing Number <sup>a</sup> NA	
, маториту	2.04 2.20 2.18 2.34 2.38 2.42	Commercial Commercial Residential Residential	50 12 46	80		
	2.20 2.18 2.34 2.38 2.42	Commercial Residential Residential	12 46		NA	
	2.18 2.34 2.38 2.42	Residential Residential	46	15	NA	
	2.34 2.38 2.42	Residential		96	SQ-E-7001	
	2.38 2.42		16	96 36	SQ-E-7001 SQ-E-7002	
	2.42	Residentiai	16			
			31	81	SQ-E-7002	
	747	Residential	2	60	SQ-E-7002	
		Residential	25	60	SQ-E-7002	
	2.66	Commercial	37	72	NA	
	3.14	Residential	7	53	SQ-E-7003	
	3.22	Residential	48	98	SQ-E-7003	
	3.23	Shed	0	32	SQ-E-7003	
	3.24	Residential	46	96	SQ-E-7003	
	3.30	Residential	11	62	SQ-E-7004	
	3.32	Residential	3	23	SQ-E-7004	
	3.34	Residential	44	75	SQ-E-7004	
	3.36	Residential	23	71	SQ-E-7005	
	3.42	Residential	29	82	SQ-E-7005	
	3.49	Residential	9	51	SQ-E-7006	
	3.77	Residential	19	69	SQ-E-7007	
	3.80	Residential	10	56	SQ-E-7007	
	3.84	Residential	10	56	SQ-E-7007	
	3.85	Residential	35 85		SQ-E-7007	
	3.88	Residential	7	52	SQ-E-7007	
	3.97	Shed	46	96	SQ-E-7008	
	4.01	Residential	33	83	SQ-E-7008	
	4.23	Residential	25	77	SQ-E-7009	
	4.28	Shed	8	61	SQ-E-7009	
	4.30	Residential	32	62	SQ-E-7009	
	4.30	Residential	11	52	SQ-E-7009	
	4.43	Residential	30	71	SQ-E-7010	
LINE-36A LOOP EXTENSION Middlesex County, CT						
Cromwell	1.28	Residential	8	34	CJ-E-7001	
E-1 SYSTEM LATERAL TAKE-U			ŭ	0.1	00 2 700 1	
New London County, CT	7					
Franklin	7.34	Commercial	90	95	NA	
E-1 SYSTEM LATERAL LOOP EX		Commercial	00	00	100	
New London County, CT	KI LIVOIOIV					
Montville	0.12	Residential	23	48	NA	
WEST ROXBURY LATERAL	0.12	Nesideliliai	23	70	INA	
Norfolk County, MA						
Westwood	0.00	Commoraial	1.4	65	NΙΛ	
vvestwood		Commercial	14	65 >50	NA NA	
Do dh a ra	0.00	Commercial	>50	>50	NA NA	
Dedham	0.52	Commercial	32	82	NA NA	
	0.74	Commercial	47	94	NA	
	0.79	Commercial	2	58	NA	
	0.82 0.85	Commercial Residential	48 42	101 91	NA BB-P-8500	

Facility, County, State,			Approx. Distance from Construction	Approx. Distance from Pipeline	Residential Drawin
Municipality	Milepost	Type of Structure	Work Area (feet)	Centerline (feet)	Number <sup>a</sup>
	0.88	Residential	25	67	BB-P-8500
	0.90	Residential	16	55	BB-P-8500
	0.91	Residential	21	58	BB-P-8500
	0.92	Residential	29	69	BB-P-8500
	0.94	Commercial	35	53	BB-P-8500
	0.93	Residential	26	67	BB-P-8500
	0.95	Residential	32	69	BB-P-8500
	0.96	Residential	23	61	BB-P-8501
	0.99	Residential	50	95	BB-P-8501
	1.01	Residential	25	68	BB-P-8501
	1.02	Residential	27	70	BB-P-8501
	1.04	Commercial	41	64	NA
	1.07	Commercial	<1	74	NA
	1.13	Commercial	2	23	NA
	1.21	Commercial	8	36	NA
	1.23	Commercial	23	49	NA
	1.25	Commercial	22	46	NA
	1.27	Commercial	22	47	NA
	1.28	Commercial	18	43	NA
	1.31	Commercial	16	44	NA
	1.32	Commercial	15	44	NA
	1.36	Commercial	<1	15	NA
	1.42	Commercial	20	45	NA
	1.50	Commercial	7	27	NA
	1.51	Commercial	6	27	NA
	1.67	Commercial	33	67	NA
	2.08	Commercial	43	88	BB-P-8503
	2.09	Residential	47	66	BB-P-8503
	2.20	Commercial	31	52	BB-P-8504
	2.25	Residential	47	72	BB-P-8504
	2.30	Commercial	36	49	NA
	2.35		48		NA NA
	2.57	Commercial		78 75	NA NA
	2.59	Commercial	2 2	75 38	NA NA
		Commercial			BB-P-8505
	2.61	Residential Residential	2	16	BB-P-8505
	2.62		5	20	
	2.62	Residential	11	25	BB-P-8505
	2.63	Residential	>1	29	BB-P-8505
	2.63	Residential	4	34	BB-P-8505
	2.64	Residential	12	25	BB-P-8505
	2.64	Residential	6	37	BB-P-8505
	2.64	Residential	20	33	BB-P-8505
	2.66	Residential	24	44	BB-P-8505
	2.67	Residential	12	38	BB-P-8505
	2.67	Residential	12	39	BB-P-8505
	2.68	Residential	9	25	BB-P-8505
	2.69	Residential	15	31	BB-P-8505
	2.69	Residential	24	52	BB-P-8506

Facility, County, State,	B #11= = = = 4	Tuno of Ohrester	Approx. Distance from Construction	Approx. Distance from Pipeline	Residential Drawing	
Municipality	Milepost	Type of Structure	Work Area (feet)	Centerline (feet)	Number <sup>a</sup>	
	2.71	Residential	14	30	BB-P-8506	
	2.71	Residential	5	30	BB-P-8506	
	2.73	Residential	21	35	BB-P-8506	
	2.75	Residential	40	70	BB-P-8506	
	2.76	Residential	36	67	BB-P-8506	
	2.77	Residential	37	50	BB-P-8506	
	2.78	Residential	22	49	BB-P-8507	
	2.79	Residential	5	16	BB-P-8507	
	2.80	Residential	23	55	BB-P-8507	
	2.80	Residential	10	21	BB-P-8507	
	2.80	Residential	7	17	BB-P-8507	
	2.81	Residential	29	38	BB-P-8507	
	2.82	Residential	26	57	BB-P-8507	
	2.82	Residential	7	17	BB-P-8507	
	2.82	Residential	20	50	BB-P-8507	
	2.83	Residential	6	19	BB-P-8507	
	2.84	Residential	38	66	BB-P-8507	
	2.84	Residential	10	25	BB-P-8507	
	2.85	Residential	7	23	BB-P-8507	
	2.86	Residential	9	25	BB-P-8508	
	2.87	Residential	23	55	BB-P-8508	
	2.88	Residential	8	23	BB-P-8508	
	2.89	Residential	4	17	BB-P-8508	
	2.90	Residential	4	15	BB-P-8508	
	2.90	Residential	22	57	BB-P-8508	
	2.92	Residential	4	15	BB-P-8508	
	2.93	Residential	9	19	BB-P-8508	
	2.94	Residential	32	46	BB-P-8509	
	2.96	Residential	36	55	BB-P-8509	
	2.97	Residential	20	39	BB-P-8509	
	2.97	Residential	11	34	BB-P-8509	
	3.05	Residential	22	104	BB-P-8510	
	3.08 3.08	Residential	23 28	64 44	BB-P-8510 BB-P-8510	
		Res./Comm.				
	3.16	Residential	14	46	BB-P-8511	
	3.17	Residential	18	41	BB-P-8511	
	3.18	Residential	30	54	BB-P-8511	
	3.19	Residential	10	50	BB-P-8511	
	3.22	Residential	12	56	BB-P-8512	
	3.23	Residential	22	64	BB-P-8512	
	3.24	Residential	29	51	BB-P-8512	
	3.24	Residential	17	60	BB-P-8512	
	3.25	Residential	19	60	BB-P-8512	
	3.25	Residential	52	74	BB-P-8512	
	3.27	Residential	14	52	BB-P-8512	
	3.28	Residential	44	64	BB-P-8512	
	3.29	Residential	44	68	BB-P-8512	
	3.29	Residential	23	68	BB-P-8512	

Facility, County, State,			Approx. Distance from Construction	Approx. Distance from Pipeline	Residential Drawin	
Municipality	Milepost	Type of Structure	Work Area (feet)	Centerline (feet)	Number <sup>a</sup>	
	3.30	Residential	36	58	BB-P-8512	
	3.30	Residential	36	83	BB-P-8513	
	3.32	Residential	31	49	BB-P-8513	
	3.32	Residential	34	82	BB-P-8513	
	3.33	Residential	25	43	BB-P-8513	
	3.34	Residential	26	43	BB-P-8513	
	3.34	Residential	28	79	BB-P-8513	
	3.36	Residential	24	39	BB-P-8513	
	3.37	Residential	16	70	BB-P-8513	
	3.38	Residential	39	96	BB-P-8513	
	3.38	Residential	30	42	BB-P-8513	
	3.40	Residential	34	47	BB-P-8514	
	3.40	Commercial	30	85	BB-P-8514	
	3.41	Residential	43	56	BB-P-8514	
uffolk County, MA	• • • • • • • • • • • • • • • • • • • •	. 100.00.	.0		22 . 00	
West Roxbury, Boston	3.42	Commercial	46	102	BB-P-8514	
Woot Roxbary, Booton	3.43	Residential	28	42	BB-P-8514	
	3.44	Residential	28	43	BB-P-8514	
	3.46	Commercial	21	77	NA	
	3.46	Commercial	34	52	NA NA	
	3.48	Residential	15	67	BB-P-8515	
	3.50	Commercial	14	37	NA	
	3.50 3.51	Residential		54	BB-P-8515	
			30			
	3.51	Residential	50	102	BB-P-8515	
	3.54	Residential	17	51	BB-P-8515	
	3.54	Residential	19	44	BB-P-8515	
	3.55	Residential	10	62	BB-P-8515	
	3.57	Residential	28	80	BB-P-8515	
	3.58	Residential	5	58	BB-P-8515	
	3.58	Residential	7	60	BB-P-8516	
	3.59	Commercial	22	73	BB-P-8516	
	3.60	Residential	39	65	BB-P-8516	
	3.61	Commercial	22	74	BB-P-8516	
	3.63	Residential	47	71	BB-P-8516	
	3.63	Commercial	16	70	BB-P-8516	
	3.64	Residential	47	70	BB-P-8516	
	3.67	Residential	30	51	BB-P-8517	
	3.67	Commercial	39	95	NA	
	3.69	Residential	34	53	BB-P-8517	
	3.69	Residential	11	69	BB-P-8517	
	3.70	Residential	35	54	BB-P-8517	
	3.73	Commercial	15	72	NA	
	3.73	Commercial	18	36	NA	
	3.74	Commercial	21	44	NA	
	3.75	Commercial	6	54	NA	
	3.76	Commercial	13	84	NA	
	3.78	Commercial	5	20	NA	
	3.78	Commercial	5	20	NA	

Residences a	nd Other Structu	TABLE H-1	(cont'd)	ork Area for the AIM	l Project
Facility, County, State, Municipality	Milepost	Type of Structure	Approx. Distance from Construction Work Area (feet)	Approx. Distance from Pipeline Centerline (feet)	Residential Drawing
	3.79	Commercial	6	22	NA
	3.80	Commercial	<1	44	BB-P-8518
	3.81	Residential	15	30	BB-P-8518
	3.82	Commercial	<1	34	BB-P-8518
	3.82	Residential	8	21	BB-P-8518
	3.83	Residential	7	21	BB-P-8518
	3.85	Residential	8	22	BB-P-8518
	3.86	Residential	11	26	BB-P-8518
	3.87	Residential	7	22	BB-P-8518
	3.88	Residential	13	56	BB-P-8518
	3.88	Residential	3	19	BB-P-8518
	3.90	Residential	21	37	BB-P-8519
	3.91	Residential	22	63	BB-P-8519
	3.91	Residential	28	41	BB-P-8519
	3.92	Residential	14	25	BB-P-8519
	3.93	Residential	10	53	BB-P-8519
	3.95	Residential	14	56	BB-P-8519
	3.97	Residential	16	58	BB-P-8519
	3.97	Residential	13	28	BB-P-8519
	3.98	Residential	24	62	BB-P-8519
	3.99	Residential	23	65	BB-P-8520
	3.99	Residential	4	21	BB-P-8520
	3.99	Residential	21	63	BB-P-8520
	3.99	Residential	6	22	BB-P-8520
	4.00	Residential	15	58	BB-P-8520
	4.00	Residential	5	20	BB-P-8520
	4.02	Residential	10	53	BB-P-8520
	4.02	Residential	7	22	BB-P-8520
	4.03	Residential	6	21	BB-P-8520
	4.03	Residential	6	21	BB-P-8520
	4.08	Residential	25	62	BB-P-8521
	4.11	Residential	19	59	BB-P-8521
	4.12	Residential	24	59	BB-P-8521
	4.14	Residential	21	52	BB-P-8521
	4.15	Residential	10	36	BB-P-8521
	4.16	Residential	20	41	BB-P-8521
	4.18	Residential	51	73	BB-P-8522
	4.20	Residential	16	41	BB-P-8522
	4.21	Residential	9	36	BB-P-8522
	4.34	Residential	12	77	BB-P-8523
	4.34	Commercial	21	37	BB-P-8523
		Residential			
	4.40		37	85 76	BB-P-8523
	4.41	Residential	34	76 50	BB-P-8523
	4.42	Commercial	14	50	BB-P-8524
	4.42	Commercial	16	45	BB-P-8524
	4.45	Residential	22	55	BB-P-8524
	4.46	Residential	22	55	BB-P-8524
	4.47	Residential	25	59	BB-P-8524

Residences a	nd Other Structu	TABLE H-1	(cont'd)  the Construction We	ork Area for the AIM	l Project
Facility, County, State, Municipality	Milepost	Type of Structure	Approx. Distance from Construction Work Area (feet)	Approx. Distance from Pipeline Centerline (feet)	Residential Drawing
	4.47	Residential	15	29	BB-P-8524
	4.48	Residential	23	56	BB-P-8524
	4.48	Residential	17	29	BB-P-8524
	4.49	Residential	34	67	BB-P-8524
	4.49	Residential	13	27	BB-P-8524
	4.50	Residential	26	40	BB-P-8524
	4.51	Residential	4	36	BB-P-8524
	4.51	Residential	28	43	BB-P-8524
	4.51	Residential	5	37	BB-P-8524
	4.52	Residential	9	40	BB-P-8524
	4.53	Residential	16	47	BB-P-8524
	4.53	Residential	23	38	BB-P-8524
	4.54	Residential		45	BB-P-8525
			15		
	4.55	Residential	23	41	BB-P-8525
	4.55	Residential	8	39	BB-P-8525
	4.56	Residential	25	43	BB-P-8525
	4.56	Residential	25	49	BB-P-8525
	4.57	Residential	13	30	BB-P-8525
	4.57	Residential	10	33	BB-P-8525
	4.57	Residential	13	30	BB-P-8525
	4.59	Residential	25	41	BB-P-8525
	4.60	Residential	16	40	BB-P-8525
	4.60	Residential	11	28	BB-P-8525
	4.61	Residential	25	50	BB-P-8525
	4.61	Residential	21	39	BB-P-8525
	4.62	Residential	24	48	BB-P-8525
	4.64	Residential	11	27	BB-P-8526
	4.66	Residential	30	55	BB-P-8526
	4.66	Residential	9	24	BB-P-8526
	4.66	Residential	9	37	BB-P-8526
	4.67	Residential	13	29	BB-P-8526
	4.67	Residential	9	35	BB-P-8526
	4.68	Residential	13	31	BB-P-8526
	4.69	Residential	10	35	BB-P-8526
	4.69	Residential	17	37	BB-P-8526
	4.70	Residential	25	45	BB-P-8526
	4.71	Residential	12	37	BB-P-8526
	4.71 4.71	Residential Residential	27 23	46 47	BB-P-8526 BB-P-8526
		Residential			BB-P-8526 BB-P-8527
	4.73		21	45 54	
	4.72	Residential	38	54	BB-P-8527
	4.75	Residential	12	27	BB-P-8527
	4.75	Residential	8	24	BB-P-8527
	4.77	Residential	15	33	BB-P-8527
	4.78	Residential	24	41	BB-P-8527
	4.79	Residential	13	29	BB-P-8527
	4.80	Residential	7	22	BB-P-8527
	4.82	Residential	24	57	BB-P-8528

Residences and Other Structures Within 50 Feet of the Construction Work Area for the AIM Project								
Facility, County, State, Municipality	Milepost	Type of Structure	Approx. Distance from Construction Work Area (feet)	Approx. Distance from Pipeline Centerline (feet)	Residential Drawing			
	4.82	Residential	40	54	BB-P-8528			
	4.83	Residential	13	27	BB-P-8528			
	4.84	Residential	19	32	BB-P-8528			
	4.85	Residential	24	40	BB-P-8528			
	4.86	Residential	24	40	BB-P-8528			
	4.88	Residential	23	36	BB-P-8528			
	4.89	Residential	22	36	BB-P-8528			
	4.90	Residential	12	25	BB-P-8528			
	4.91	Residential	21	33	BB-P-8529			
	4.92	Residential	23	40	BB-P-8529			
	4.93	Residential	13	40	BB-P-8529			
	4.93	Residential	11	29	BB-P-8529			
	4.95	Residential	16	27	BB-P-8529			
	4.95	Residential	25	60	BB-P-8529			
	4.95	Residential	27	37	BB-P-8529			
	4.97	Residential	6	19	BB-P-8529			
	4.97	Residential	25	63	BB-P-8529			
	4.97	Residential	29	67	BB-P-8529			
	4.99	Residential	34	73	BB-P-8529			
	4.99	Residential	36	48	BB-P-8529/8530			
	5.00	Residential	3	25	BB-P-8530			
	5.03	Commercial	24	73	BB-P-8530			
	5.08	Commercial	16	70	BB-P-8530			
	5.09	Commercial	15	64	BB-P-8530			
	5.12	Church	16	46	NA			

## AIM PROJECT RESIDENTIAL SITE SPECIFIC CROSSING PLANS - DETAIL SHEET

### General

In general, the following measures will be taken in residential properties:

- · Notify local residents in advance of construction activities;
- Install safety fence, a minimum 100' on either side of residences as required, along the edge of the proposed Construction Work Area (CWA), to maintain equipment, material, and spoil within the CWA.
- Preserve all mature trees and landscaping where practical, consistent with construction safety;
- · Complete installation of welded pipeline sections as quickly as reasonably possible, consistent with prudent pipeline construction practices, to minimize construction time affecting a neighborhood;
- . Backfill the trench as soon as the pipe is laid or place temporary steel plates or timber mats over the trench
- Complete final cleanup (including final grading) and installation of permanent erosion control measures within 10 days after the trench is backfilled, weather conditions permitting.
- · Configure use of CWA to provide access for emergency vehicles and residential driveways, including materials available on site to provide temporary bridging across the pipeline trench if necessary.
- · Road surfaces would be restored to drivable condition as soon as practicable so that normal access could resume

### Construction Techniques

One of the following techniques shall be utilized for a longitudinal distance of 100 feet either side of the

- The Sewer Line Technique this technique is a less efficient alternative to the mainline method of construction. It is typically used when the pipeline is to be installed in very close proximity to an existing stricture or when an open ditch would adversely impact a residential or commercial structure. The technique involves installing pipe one joint at a time whereby the welding, x-ray and coating activities are all performed in the open trench. At the end of each day the newly installed pipe is backfilled or the open trench is covered with steel plates or timber mats.
- Drag Section Technique This technique is also a less efficient alternative to the mainline method. It is normally preferred over the sewer line alternative. This technique involves the trenching, installation and backfill of a prefabricated length of pipe containing several segments all in one day. At the end of each day the newly installed pipe is backfilled or the open trench is covered with steel
- . In the take up and relay segments, the soil cover over the existing pipeline will be excavated to remove the existing pipe. The removed pipe will then be transported away from the construction work area and properly disposed. The trench will be backfilled until such time as the construction crews are prepared to install the new pipeline. The replacement pipe will be installed in approximately the same location as the existing pipe using one of the above construction methods.
- Where the pipeline facilities cross residential properties, topsoil will be stripped and stockpiled separately from the subsoil during grading within the construction workspace as shown on the corresponding Typical ROW Configuration figure ES-0001
- · Reseed all disturbed lawns with a seed mixture acceptable to landowner or comparable to the adioining lawn.
- · Landowners shall be compensated for damages to ornamental shrubs and other landscape plantings based on the appraised value. Landowners shall be compensated for damages in a fair and reasonable manner, and as specified in the damage provision within the controlling easement on

### Workspace Restrictions

- · Existing structures including but not limited to; fences, sheds, swing-sets, trampolines, shrubbery, trees, gardens, flowerbeds, pools will be removed from the CWA. Landowners will be made aware of what will be relocated during negotiations for temporary workspace and damages.
- · Structures within the existing permanent easement area will be allowed to be returned to the existing permanent easement provided they are not in violation of Algonquin's existing permanent easement rights that will be made available to landowners.
- Structures outside the existing permanent easement, however within the construction work space, will be replaced as close as practicable to their previous locations.
- · Removal and replacement responsibility will be an issue that is negotiated with each landowner.

### Anticipated Construction Schedule

- Pipeline construction work is typically scheduled to take advantage of daylight hours, generally starting at 7:00 a.m. and completing at 6:00 p.m. (6 days a week).
- Pipeline installation progress should range from 40' to 200' each day.

### Public Safety Considerations

- · Traffic control will consist of devices outlined in state and local codes accompanied by local law enforcement details and qualified flagmen to safely coordinate transport of pipeline construction personnel, equipment, and material.
- · Site Security will be evaluated on a case by case basis, employing daily and/or 24 hour qualified security services as required.
- · Algonquin will staff a Landowner Hotline to receive landowner construction concerns. The toll-free Landowner Hotline is 1-866-873-2579. The Landowner Hotline will be staffed Monday through Friday from 7 AM to 5 PM and on Saturday from 7 AM to 12 PM by Algonquin personnel from the Cheshire, Connecticut field office. After these hours, a call forwarding system will be available to receive calls and page the Complaint Resolution Coordinator.

## Other Considerations

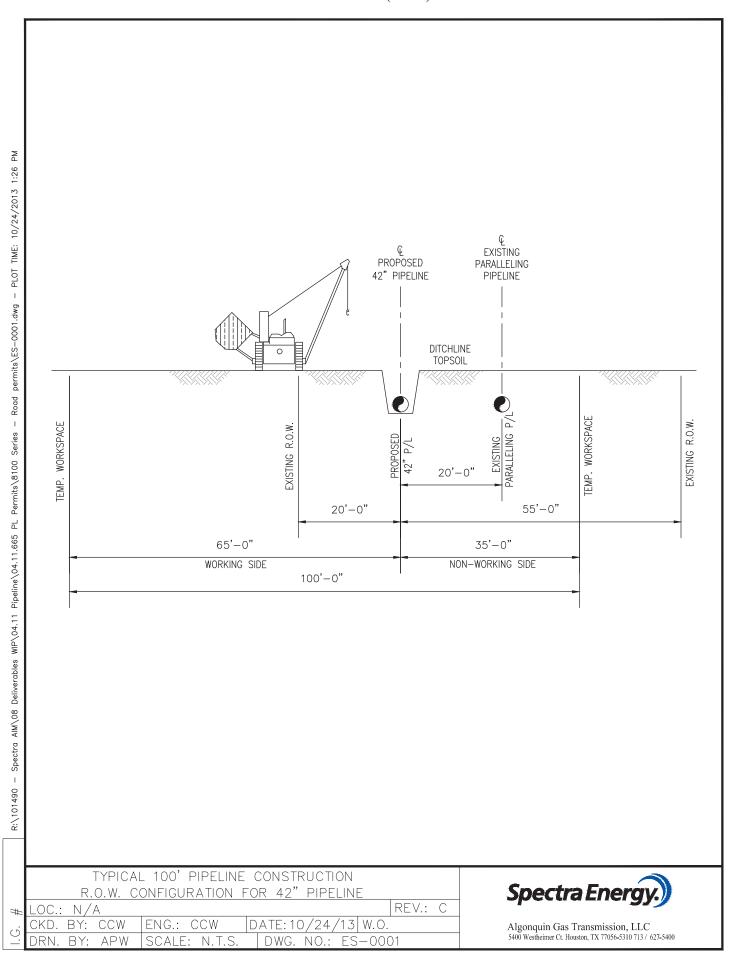
- Fugitive dust will result from land clearing, grading, excavation, concrete work, and vehicle traffic on paved and unpaved roads. The amount of dust generated will be a function of construction activity, soil type, soil moisture content, wind speed, precipitation, vehicle traffic, vehicle types, and roadway characteristics. Algonquin will employ proven construction-related practices to control fugitive dust such as application of water or other commercially-available dust control agents on unpaved areas subject to frequent vehicle traffic. In addition, construction equipment will be operated only on an
- · Noise mitigation measures to be employed during construction include ensuring that sound muffling devices that are provided as standard equipment by the construction equipment manufacturer are kept in good working order.

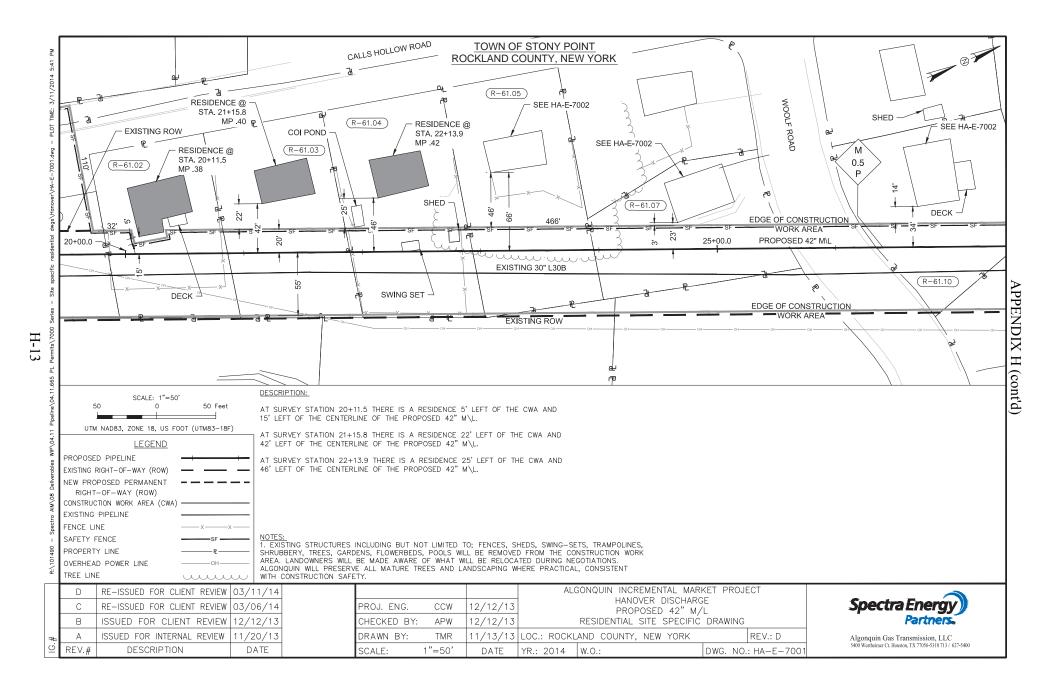
	D	RE-ISSUED FOR CLIENT REVIEW	03/11/14				ALC	GONQUIN INCREMENTAL MAR	KET PROJ	FCT
	С	NOT ISSUED	03/11/14	PROJ. ENG.	CCW	01/29/14	RESIDENTIAL SITE SPECIFIC CROSSING PLANS			
	В	NOT ISSUED	03/11/14	CHECKED BY:	CCW	01/29/14	DETAIL SHEET			
#	Α	ISSUED FOR INTERNAL REVIEW	01/27/14	DRAWN BY:	APW	01/23/14	LOC.:			REV.: D
16.	REV.#	DESCRIPTION	DATE	SCALE:		DATE	YR.: 2014	W.O.:	DWG. NO	.: HA-E-7011

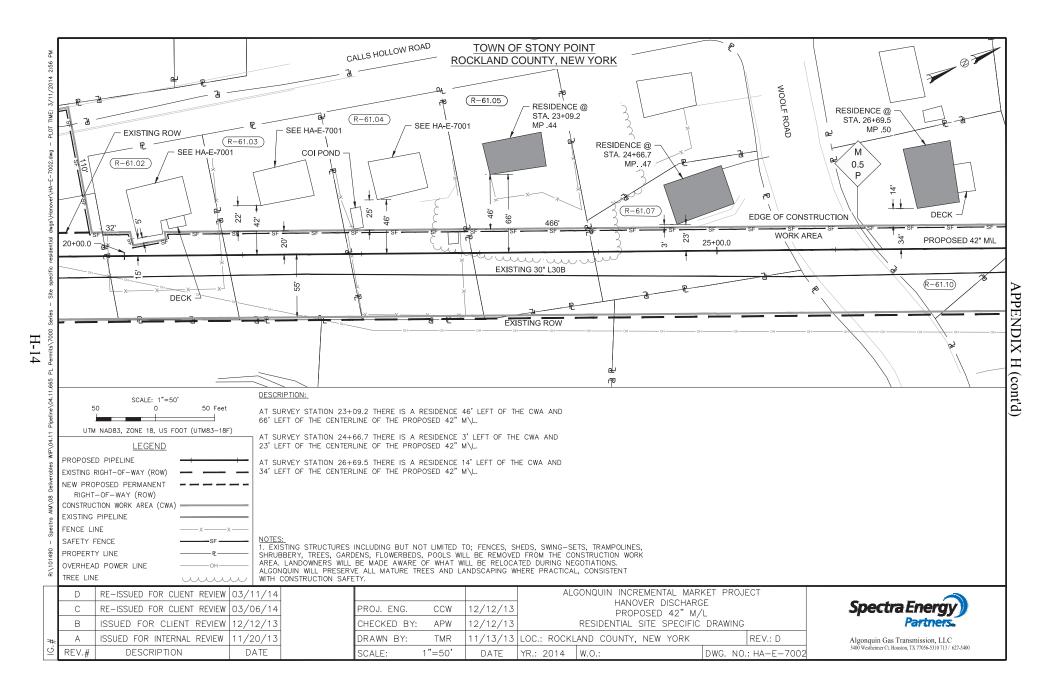


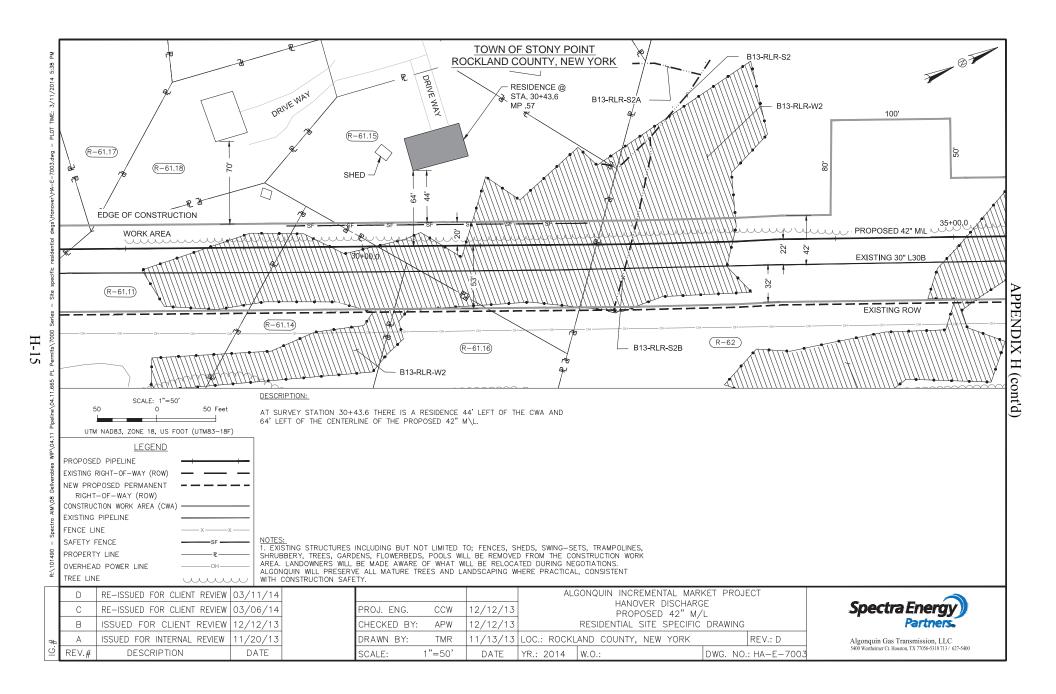
APPENDIX H (cont'd)

Algonquin Gas Transmission, LLC 5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

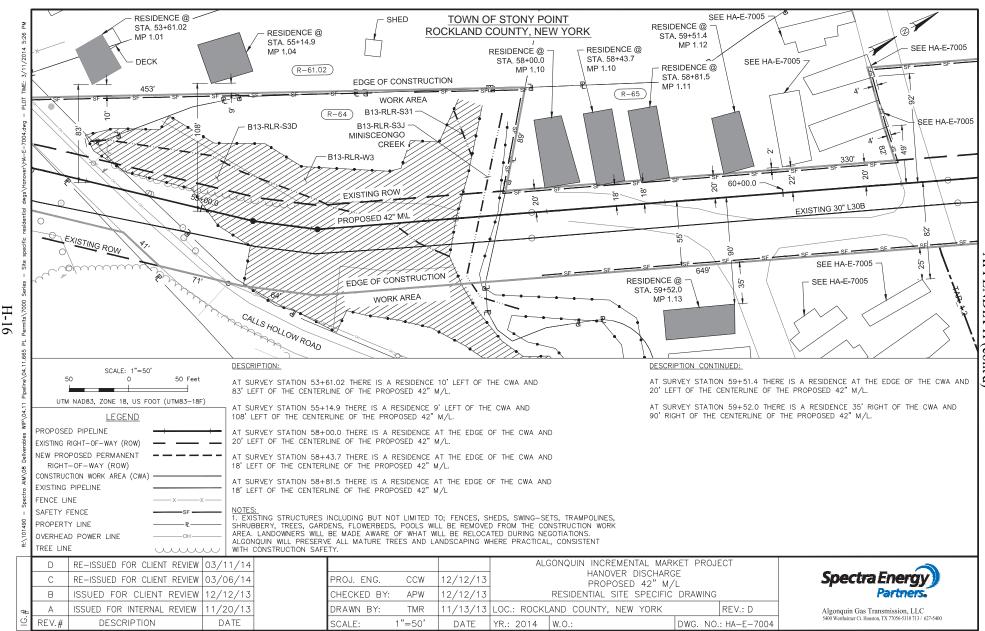




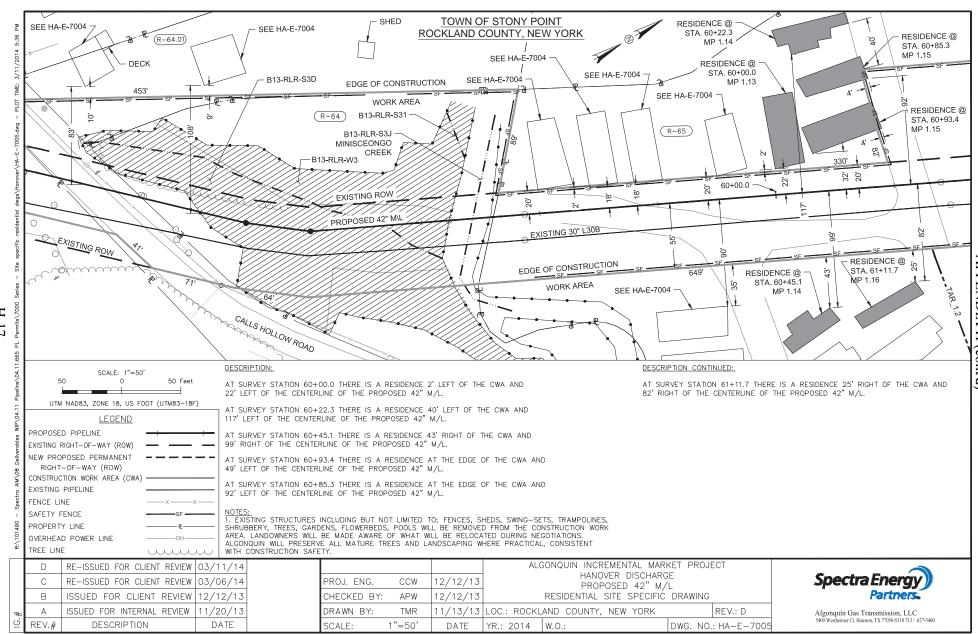


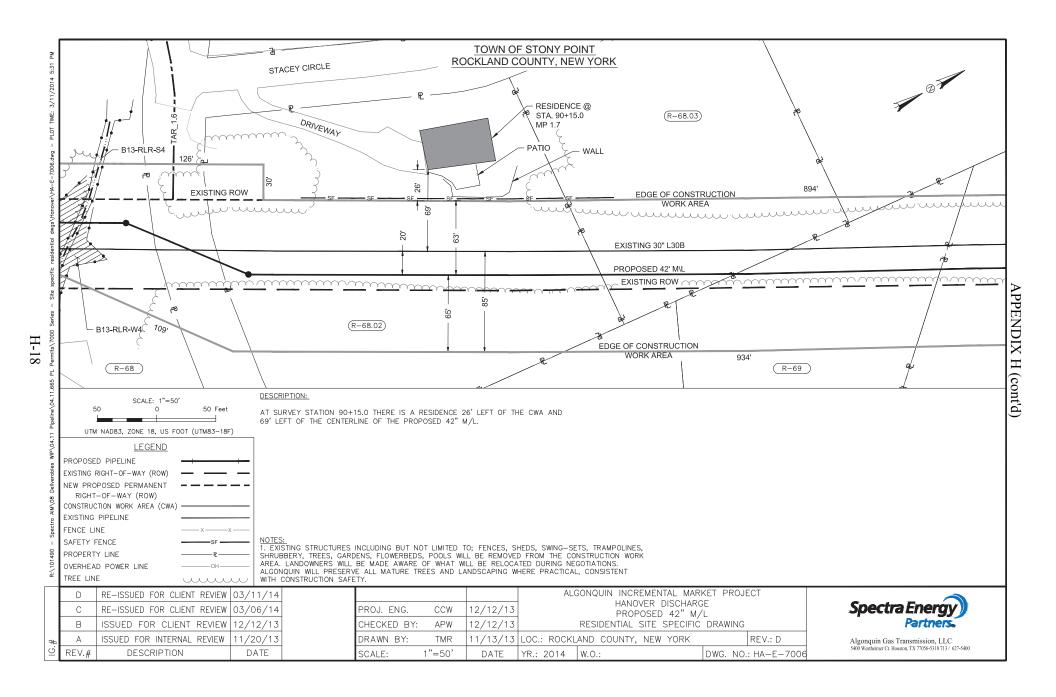


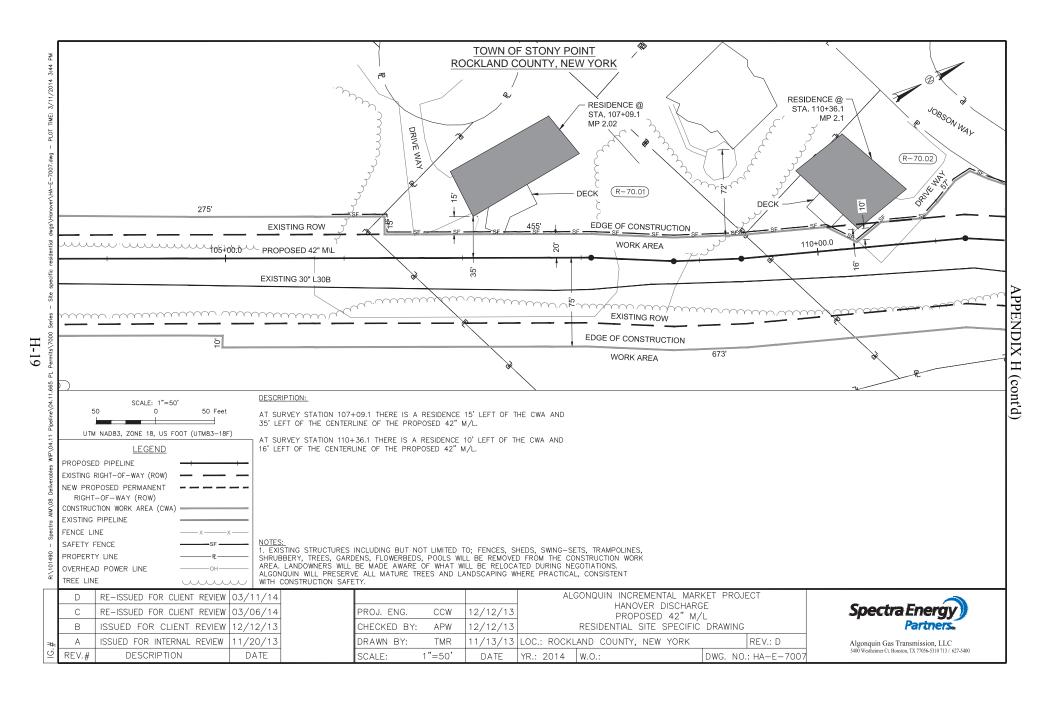


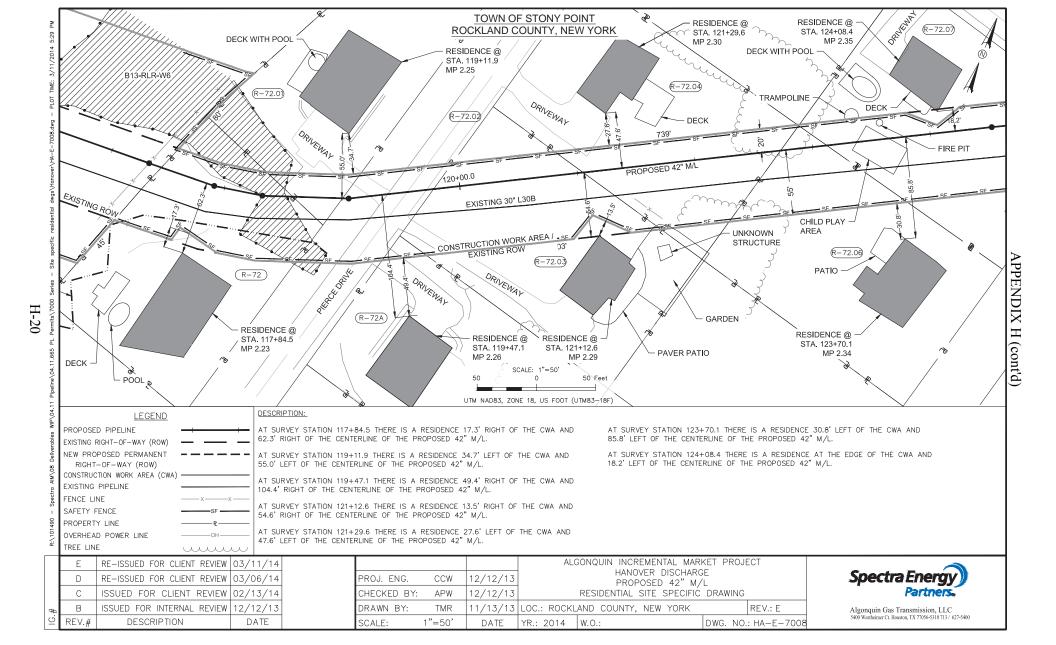


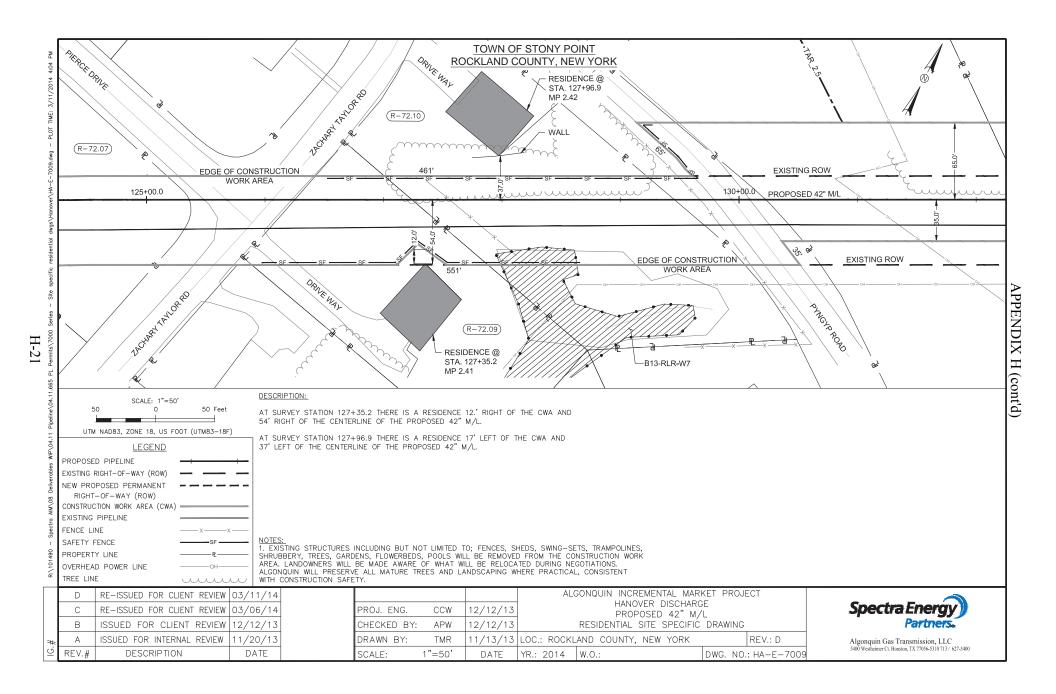


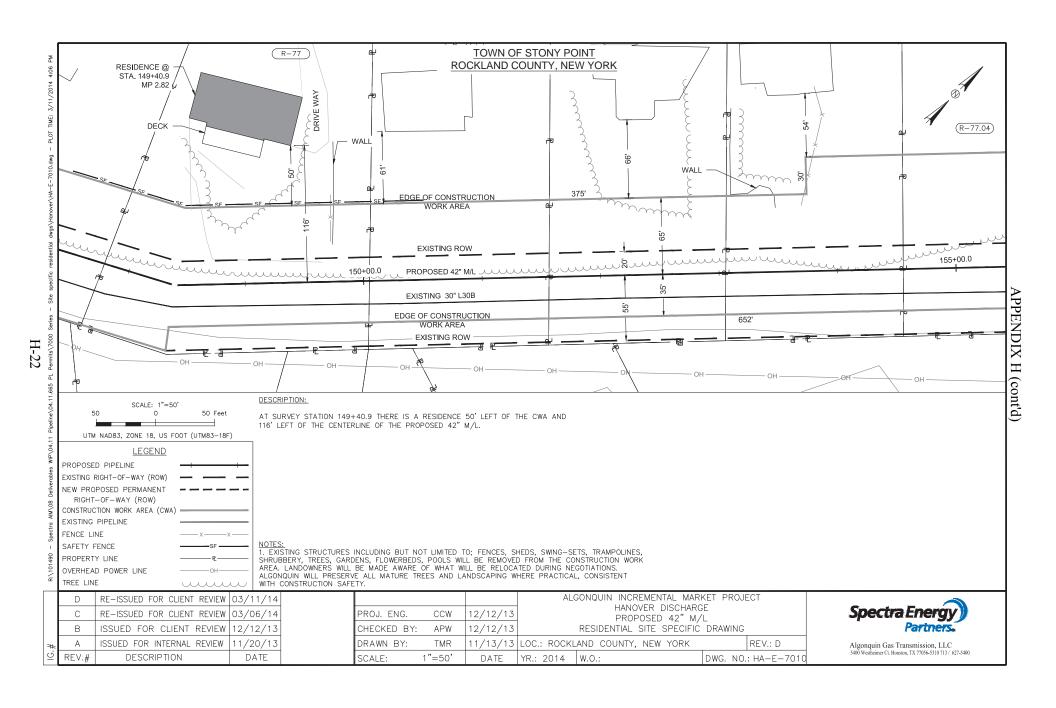


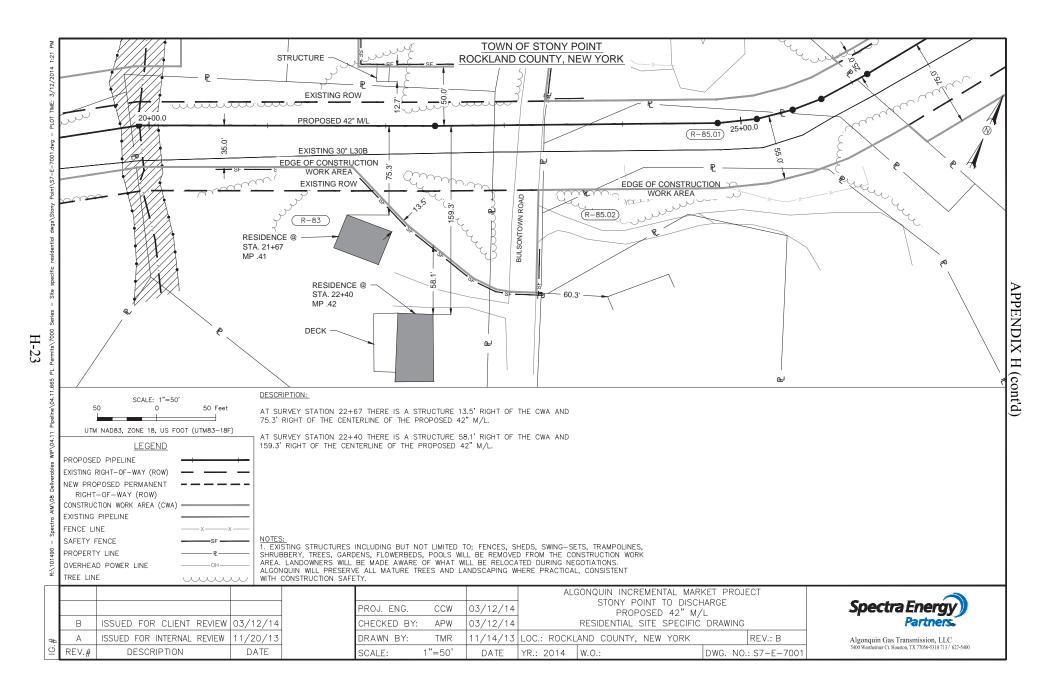


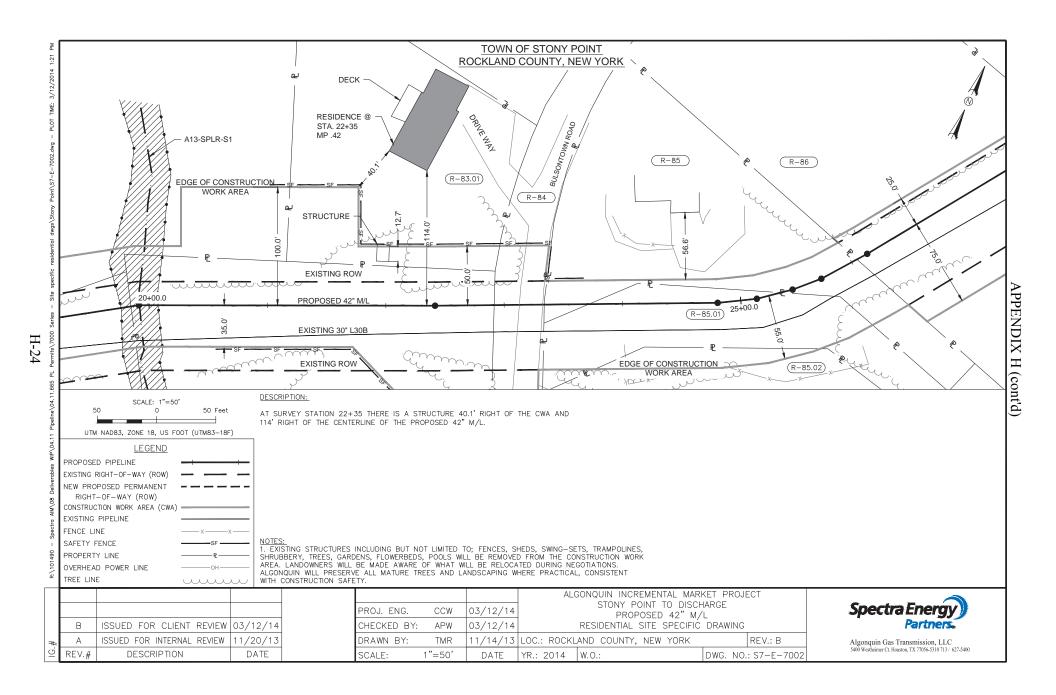


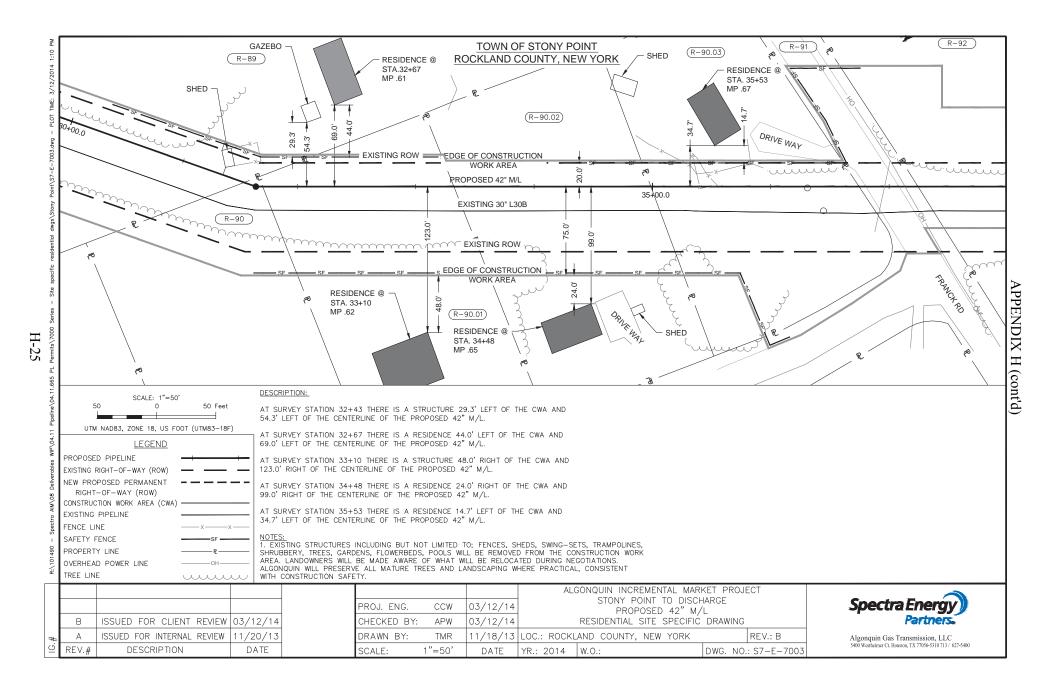


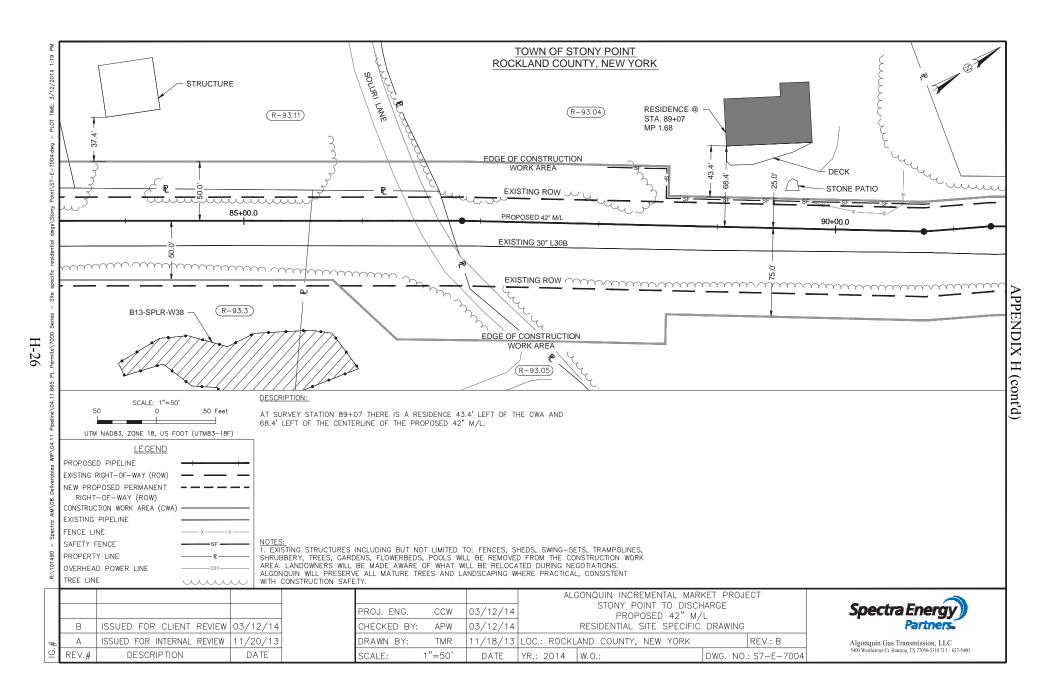


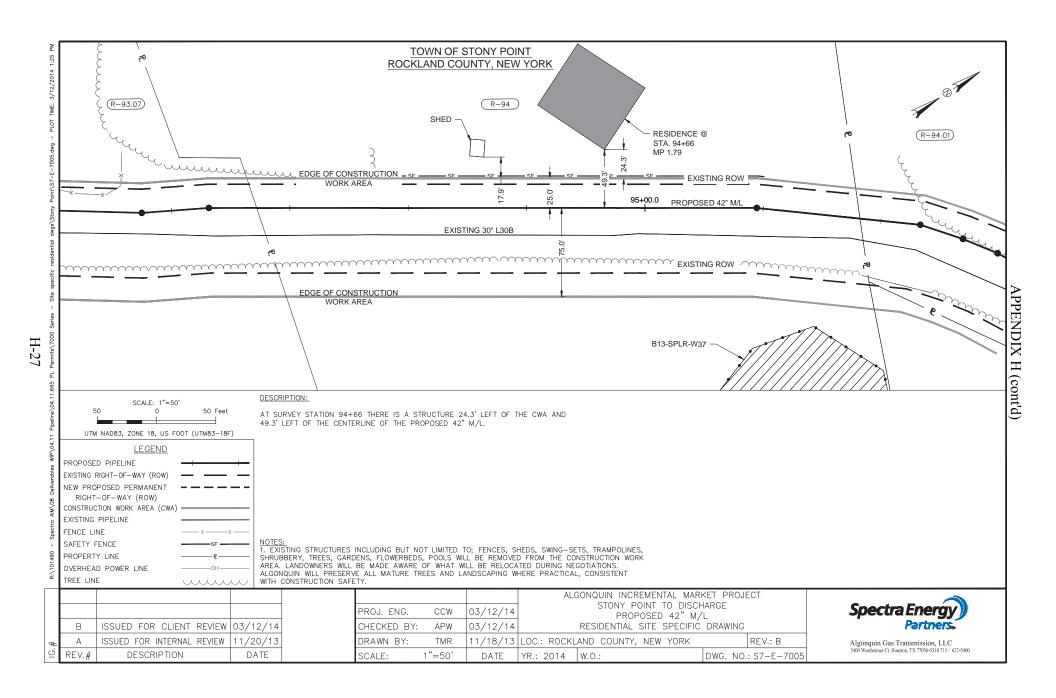


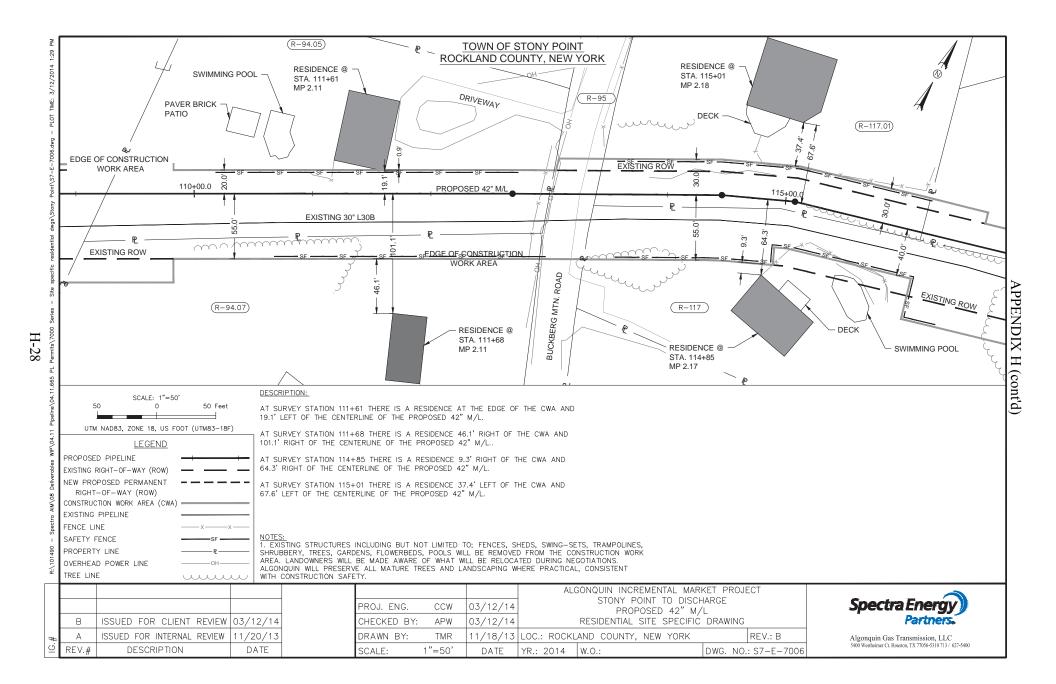


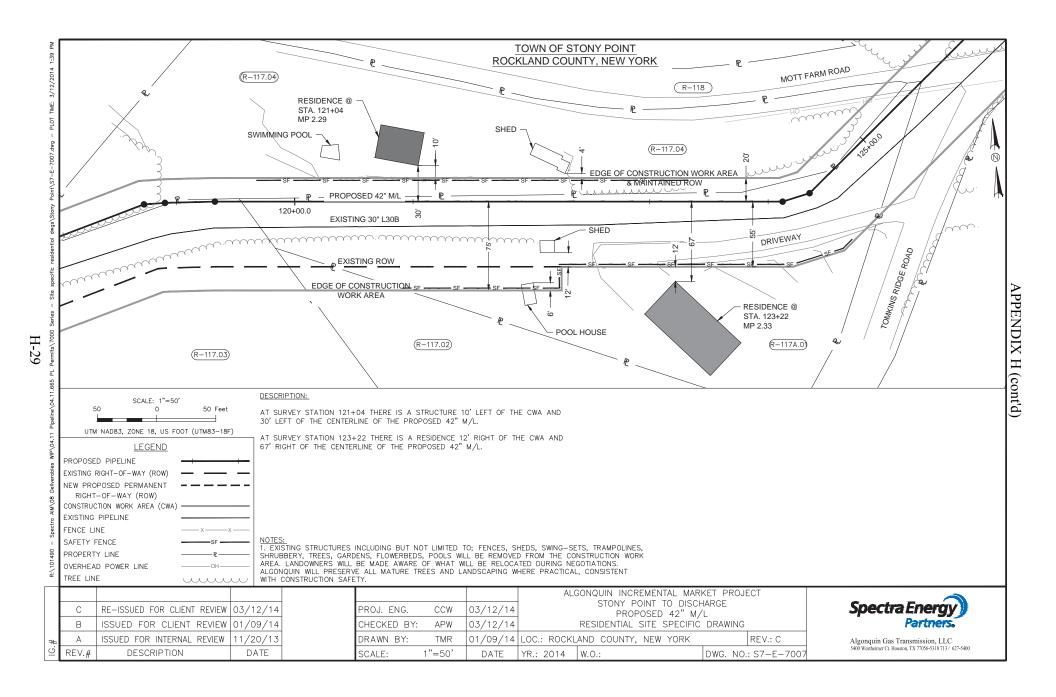


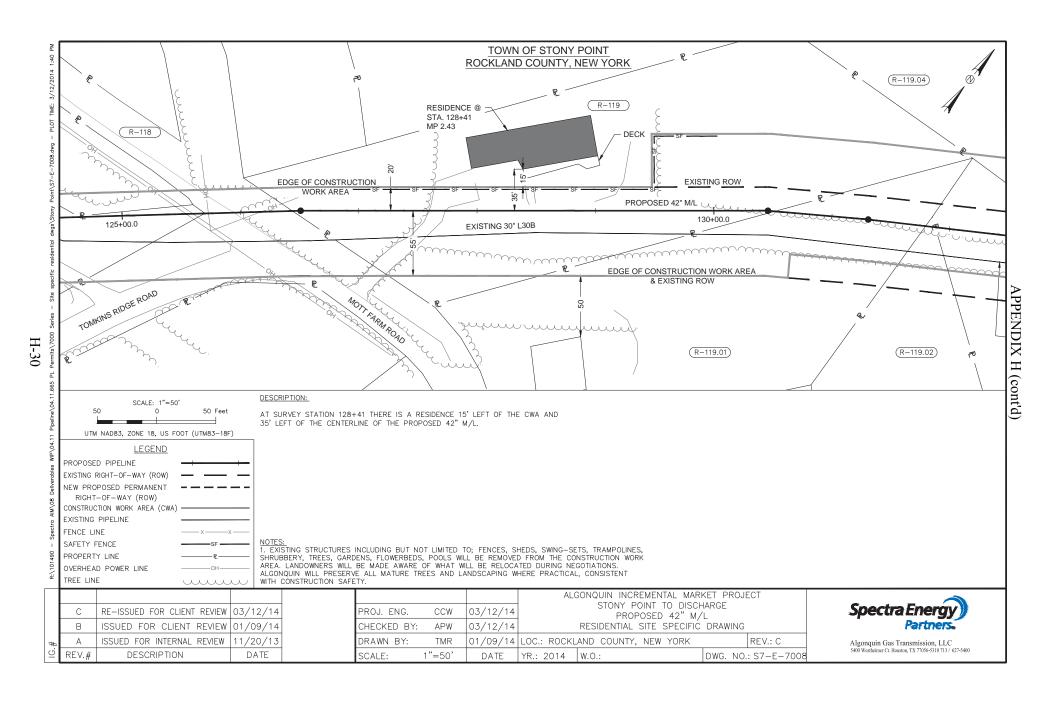


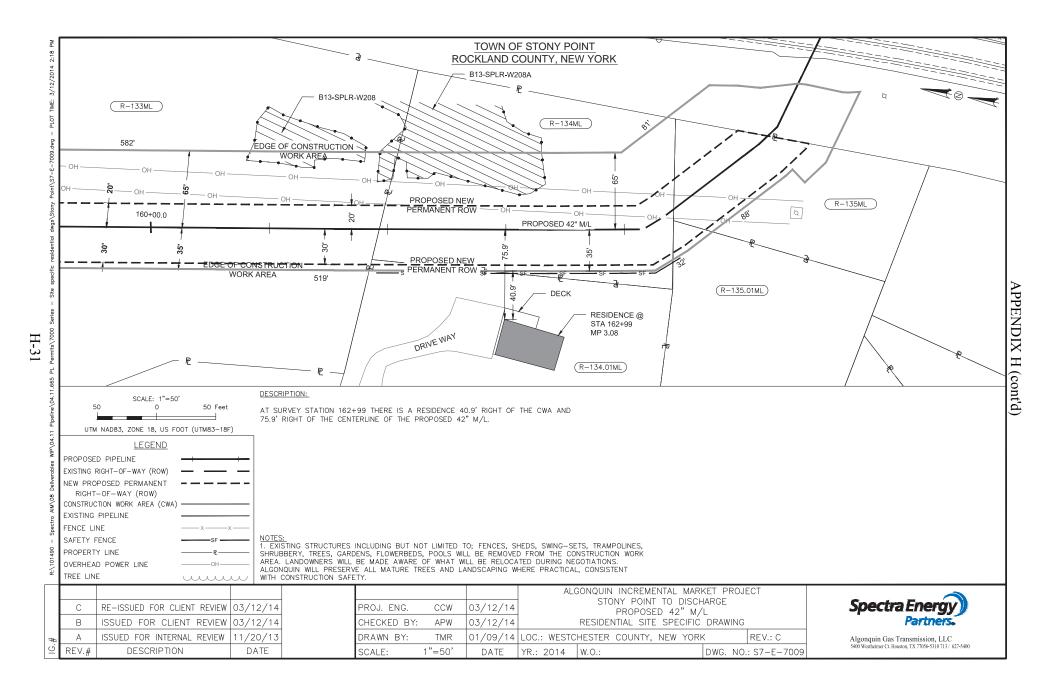




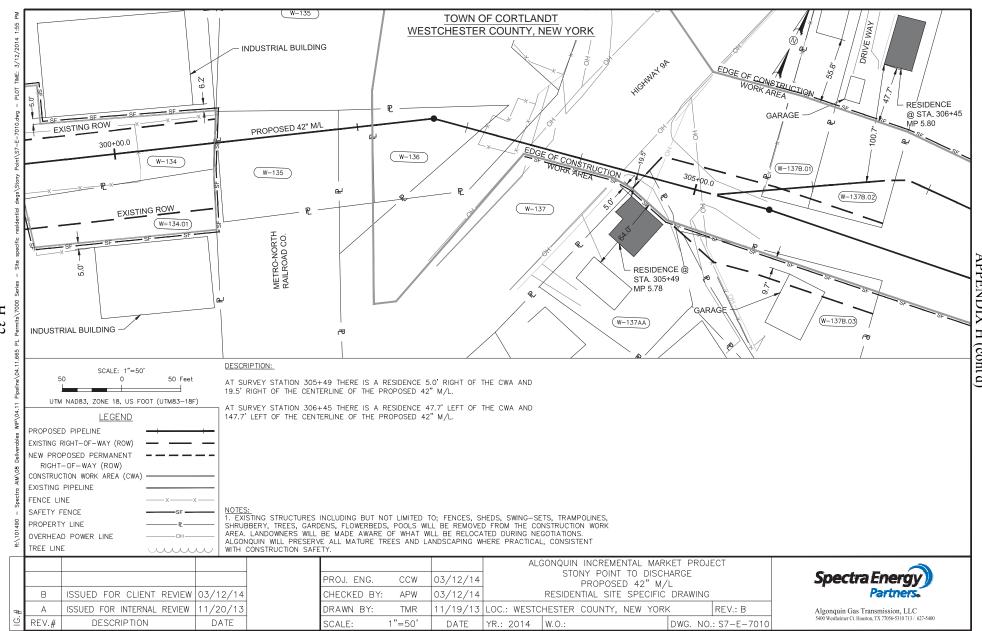


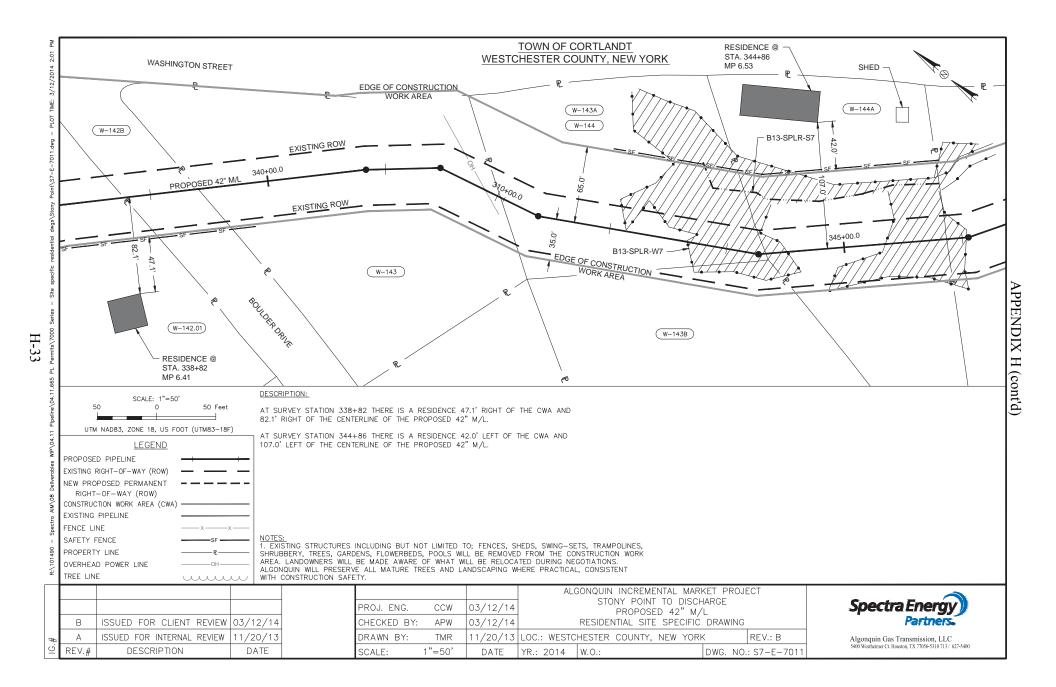


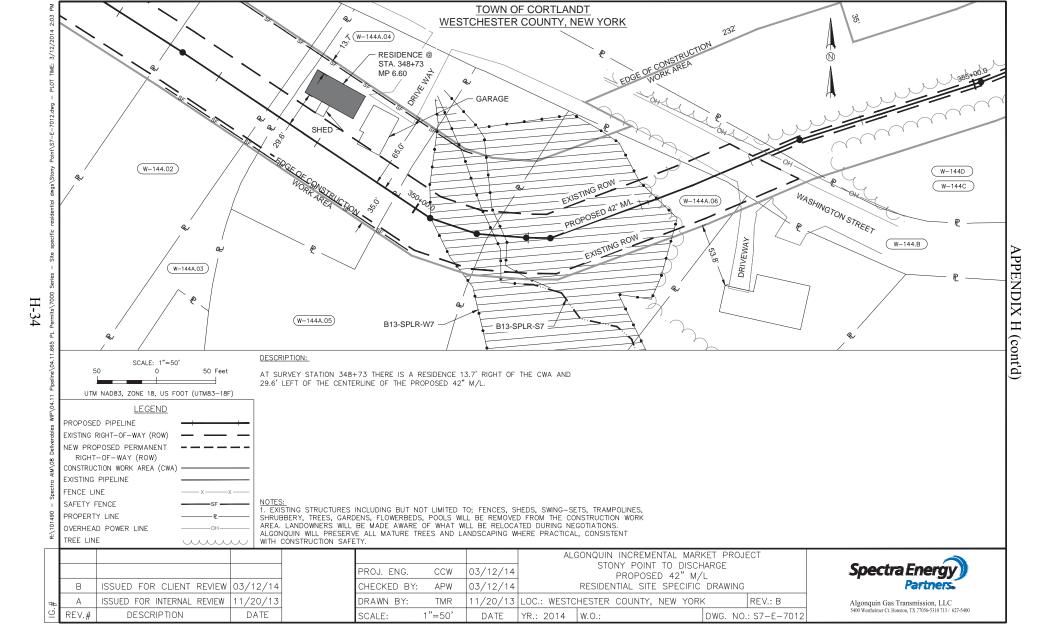


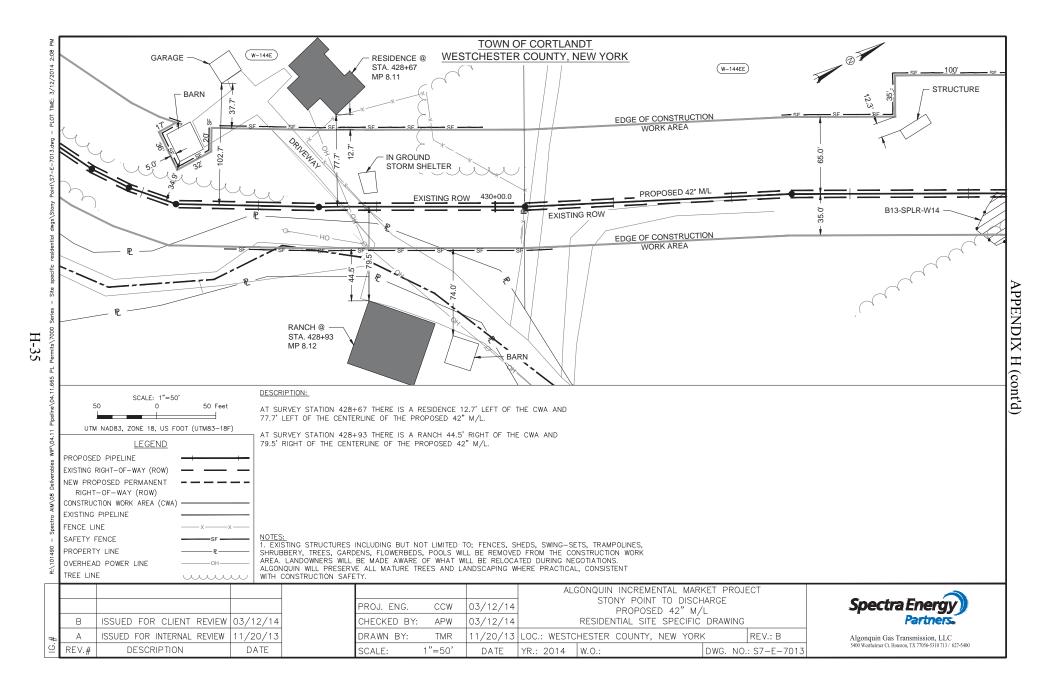


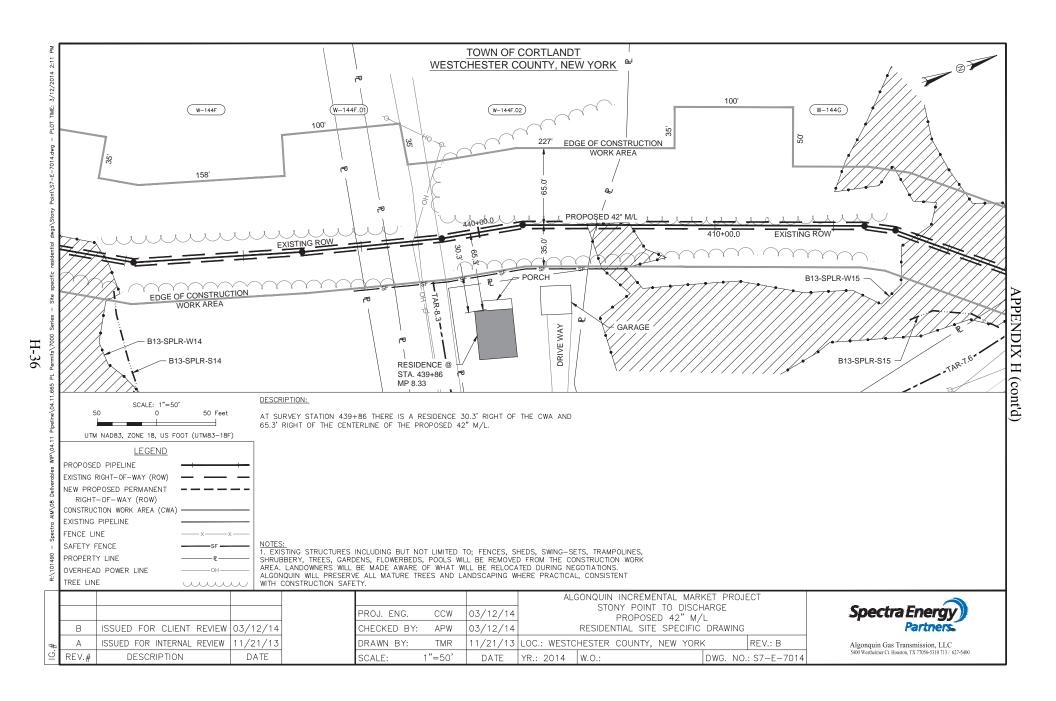


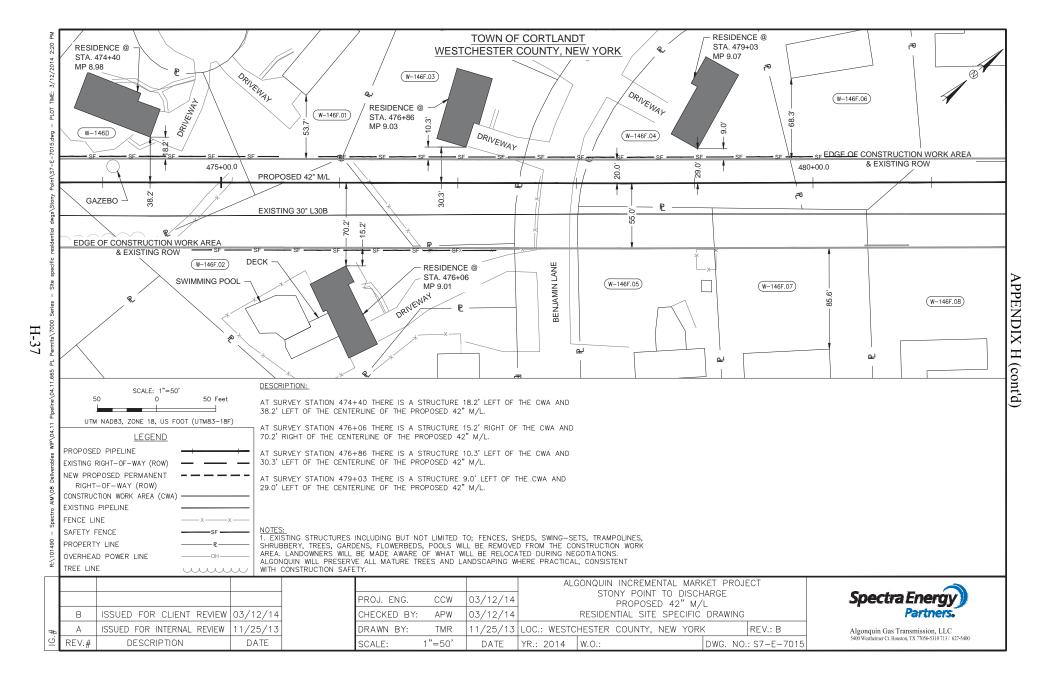


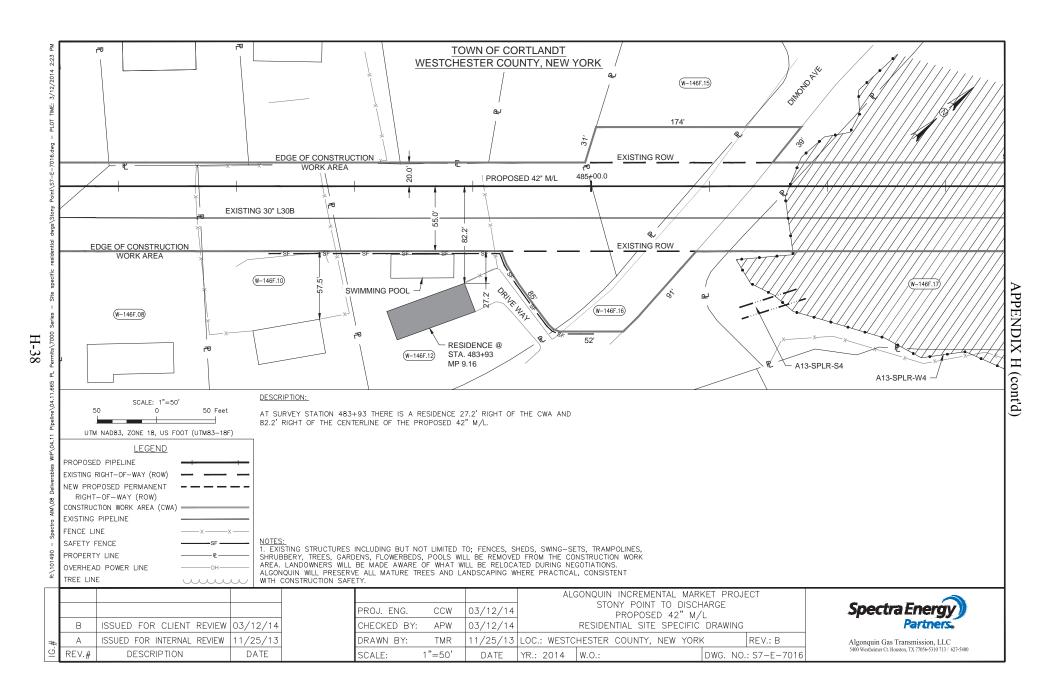


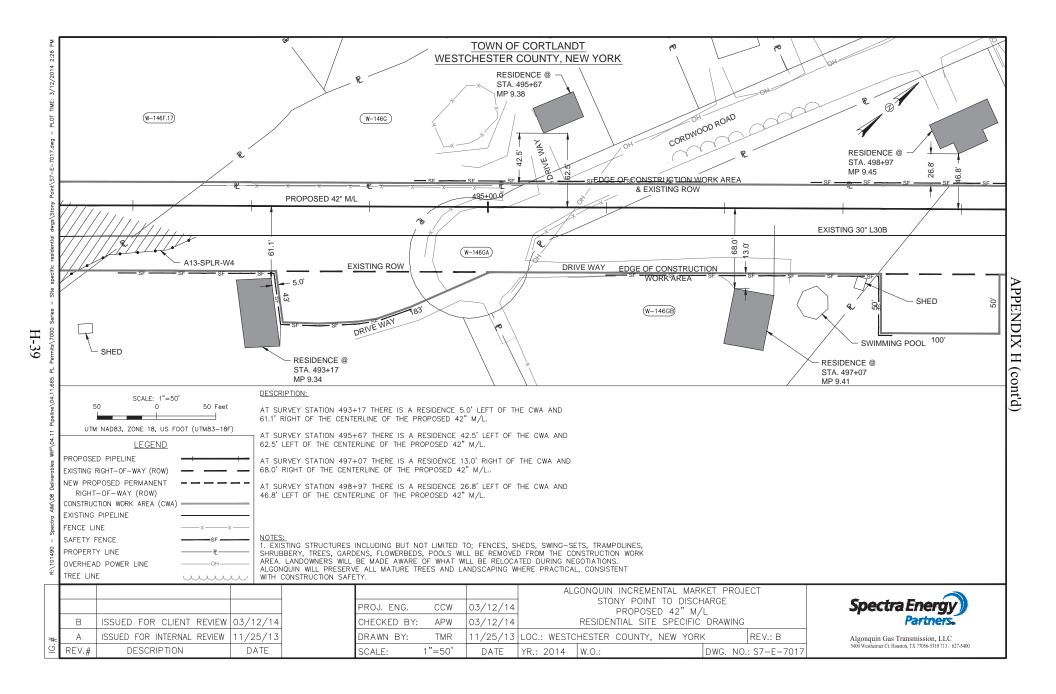


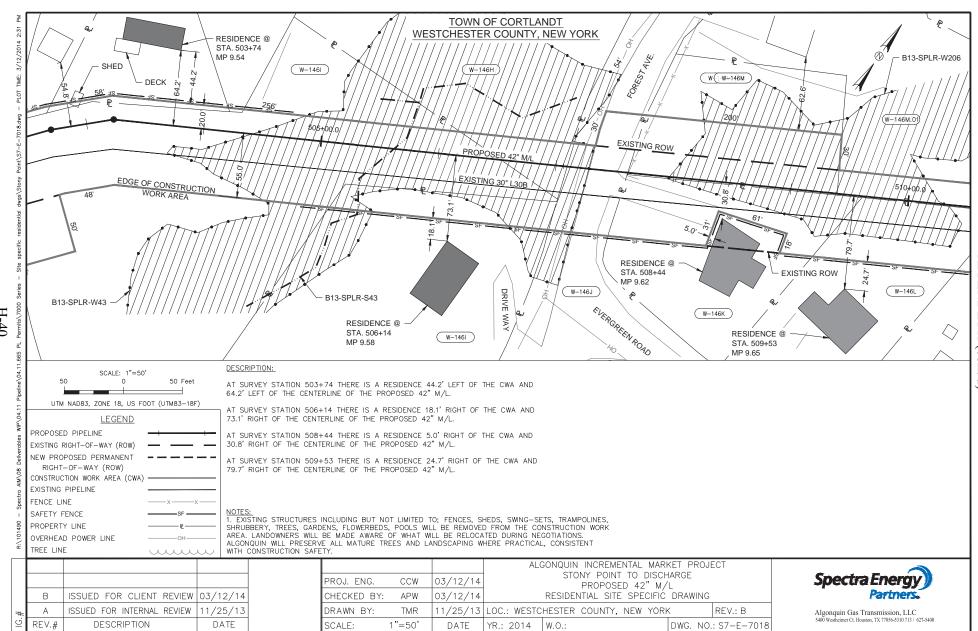


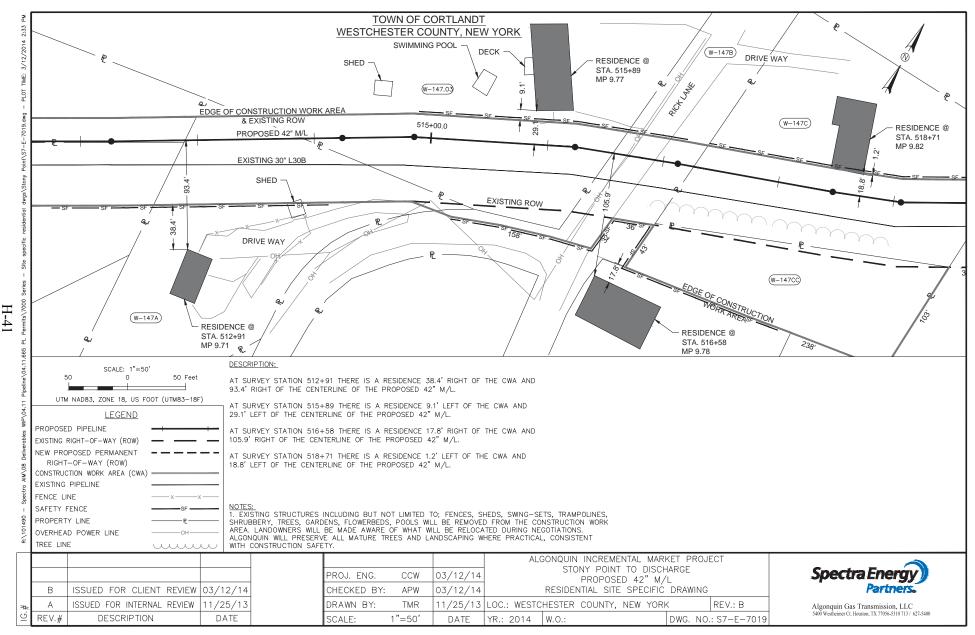


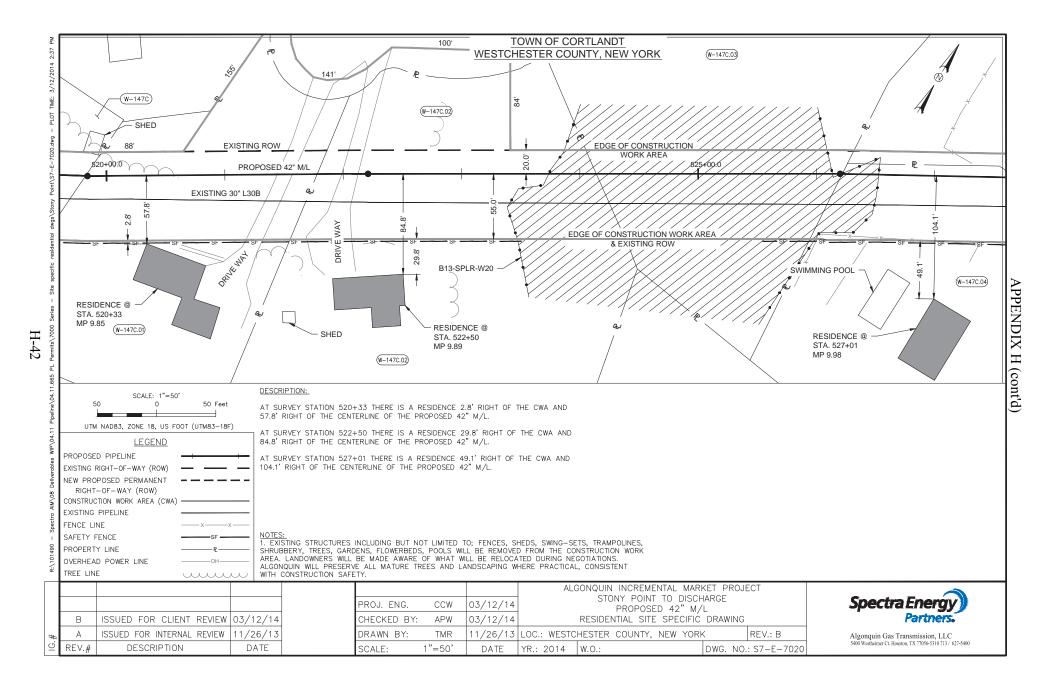


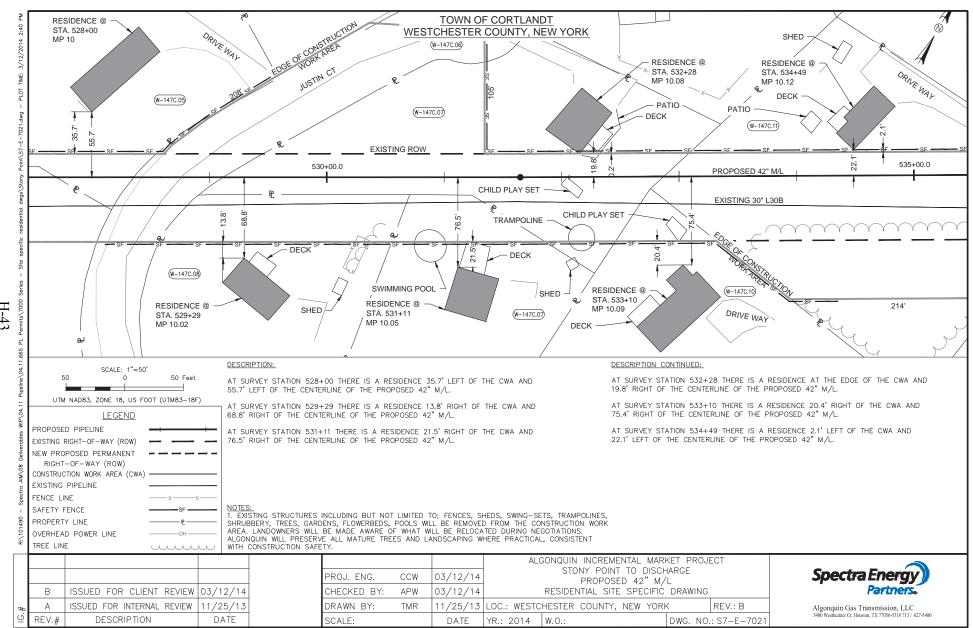


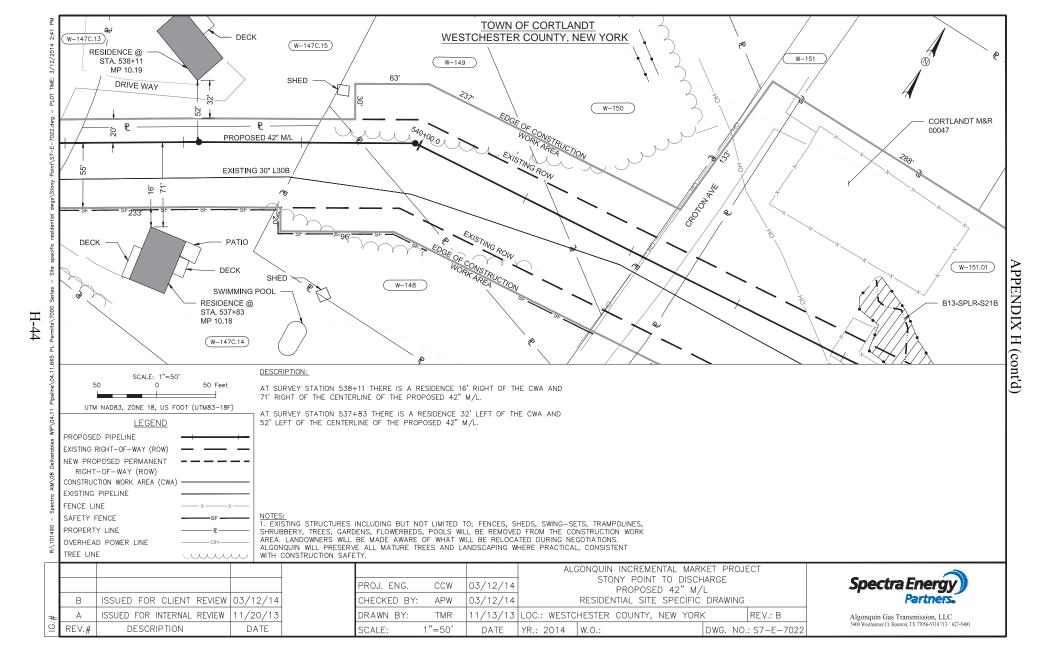


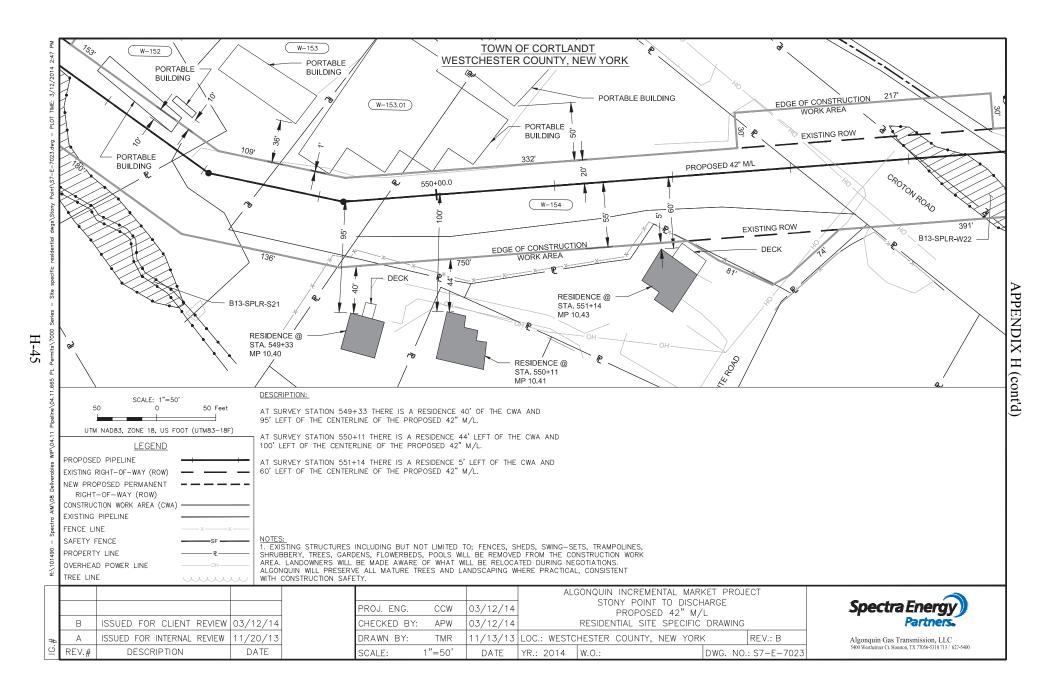


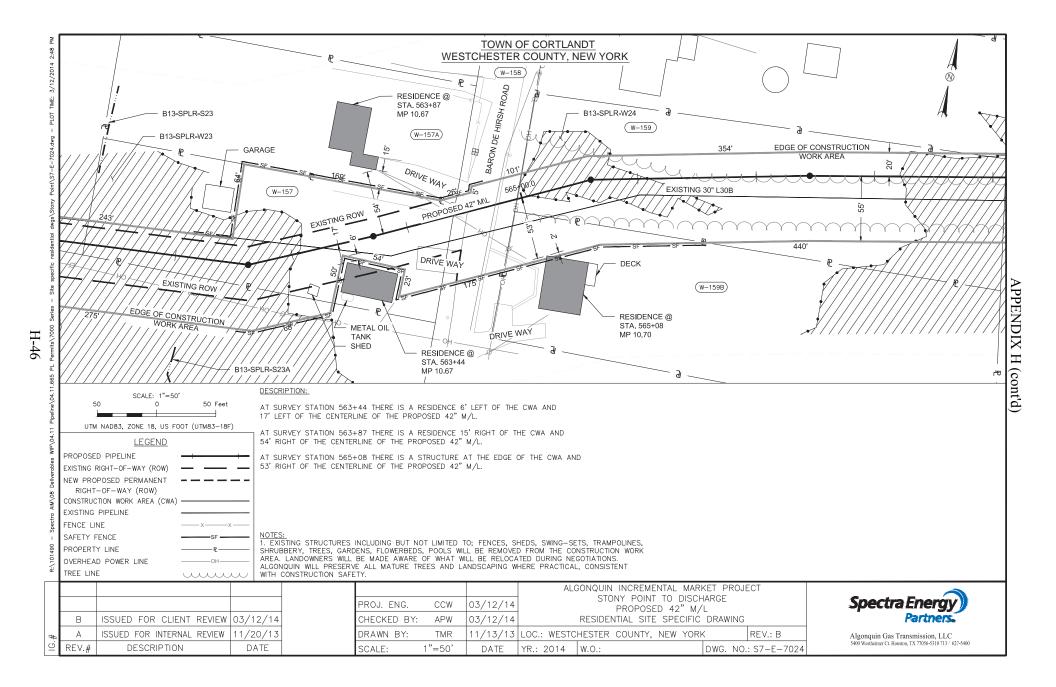




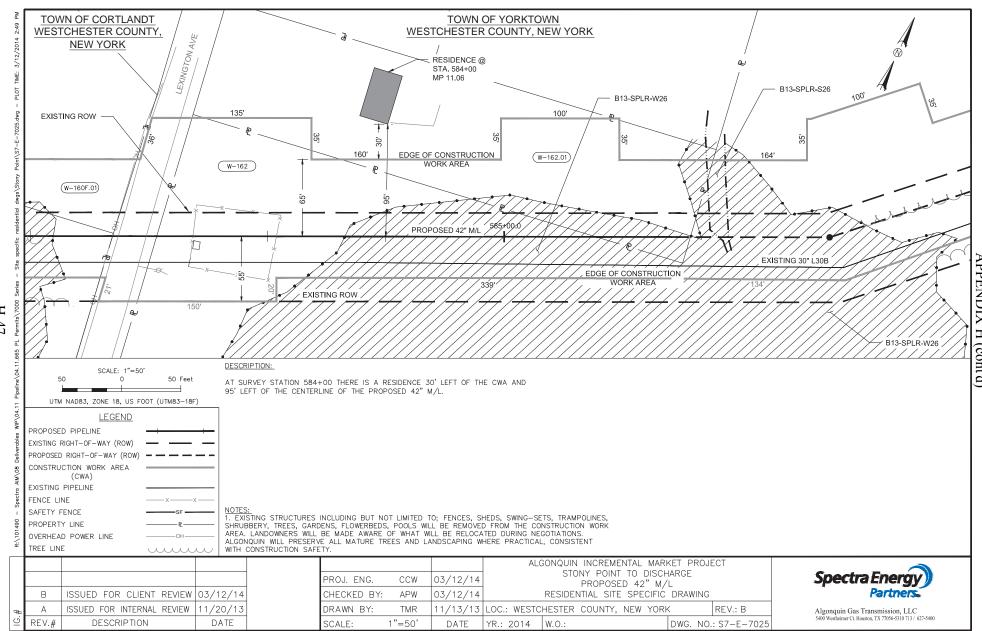


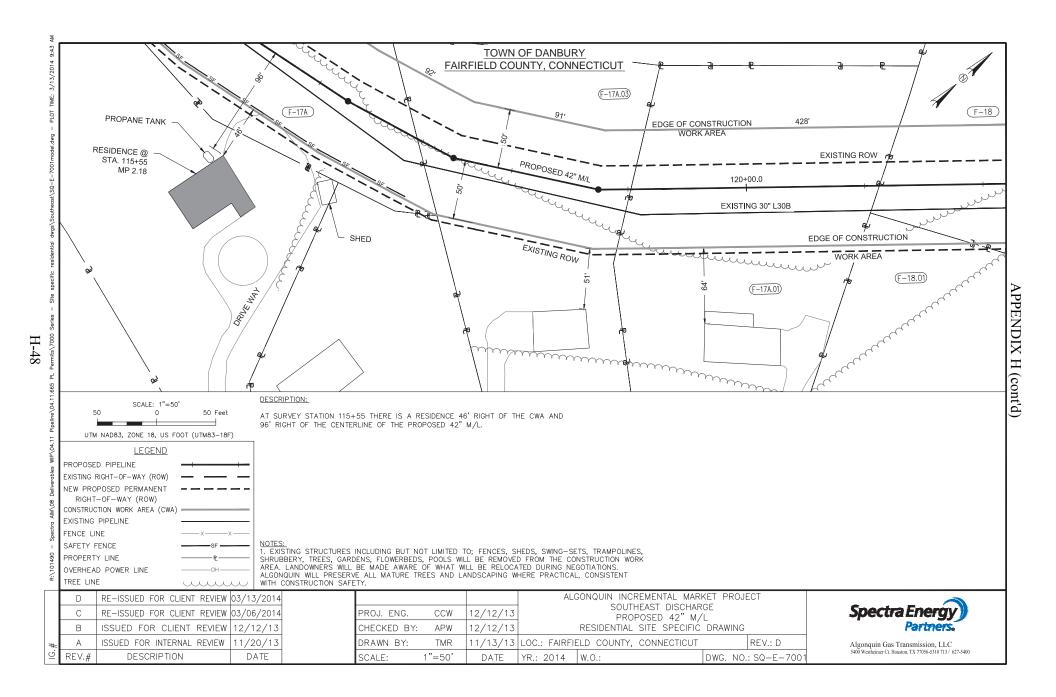


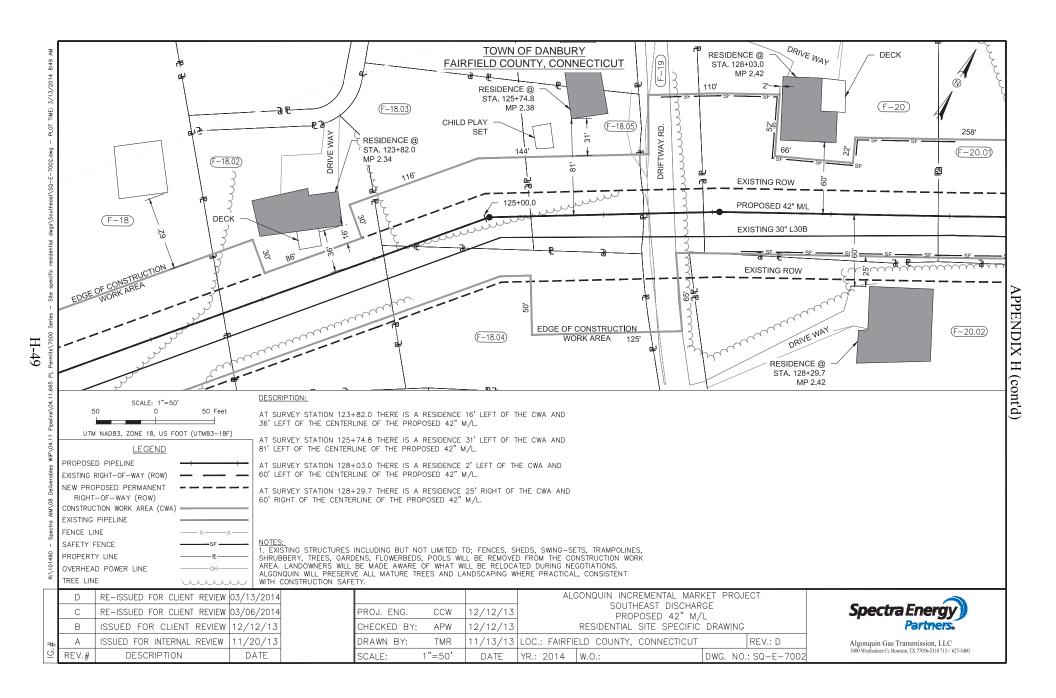


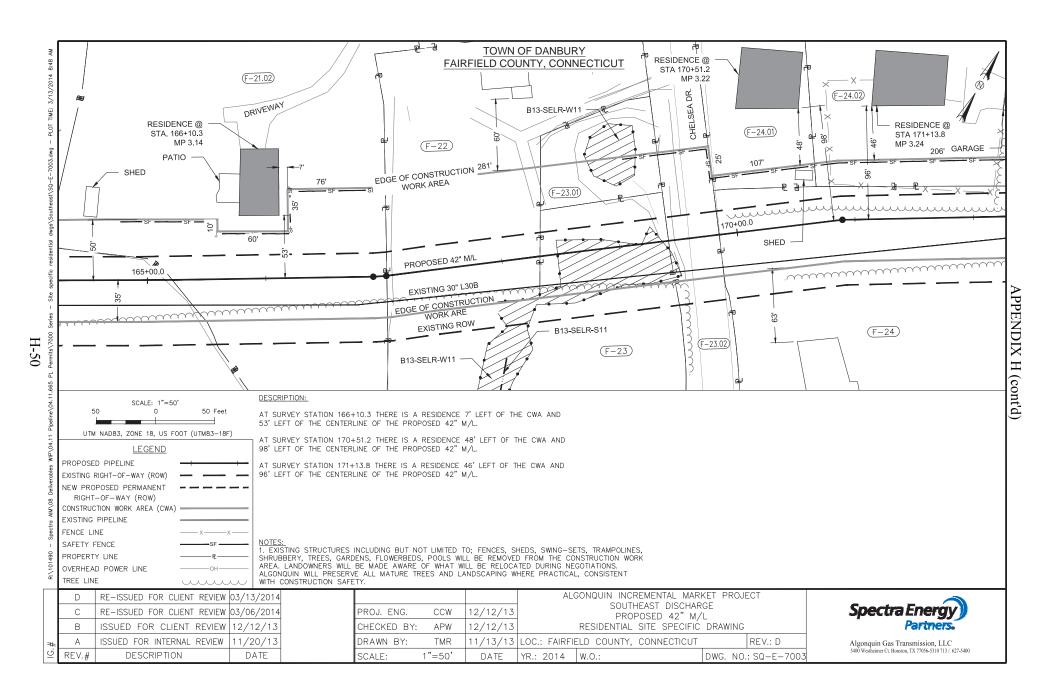


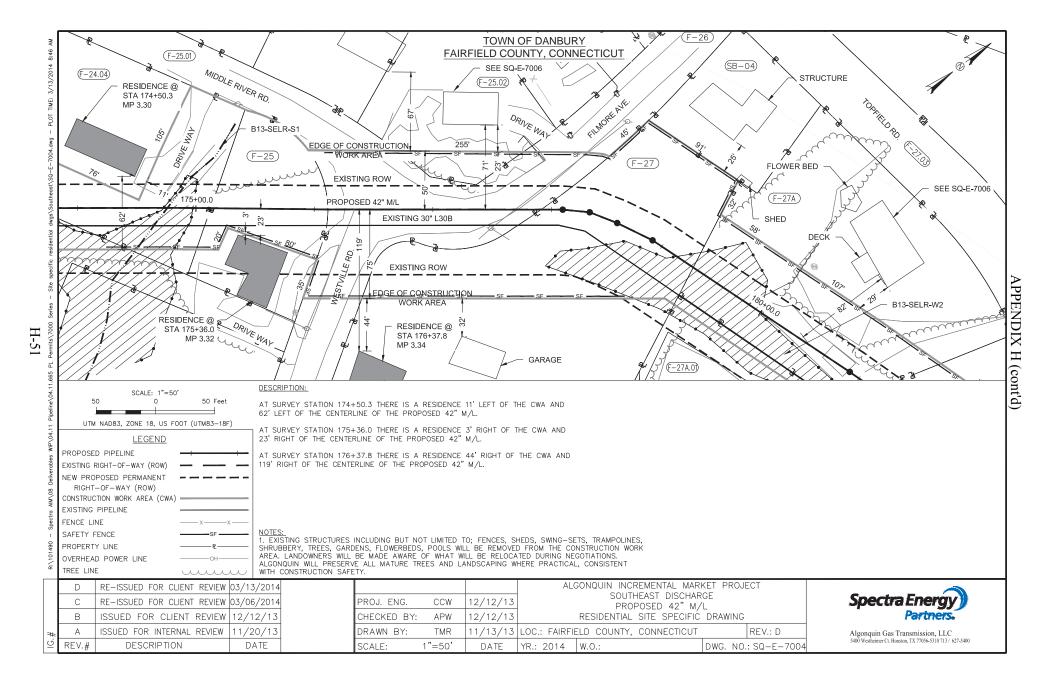


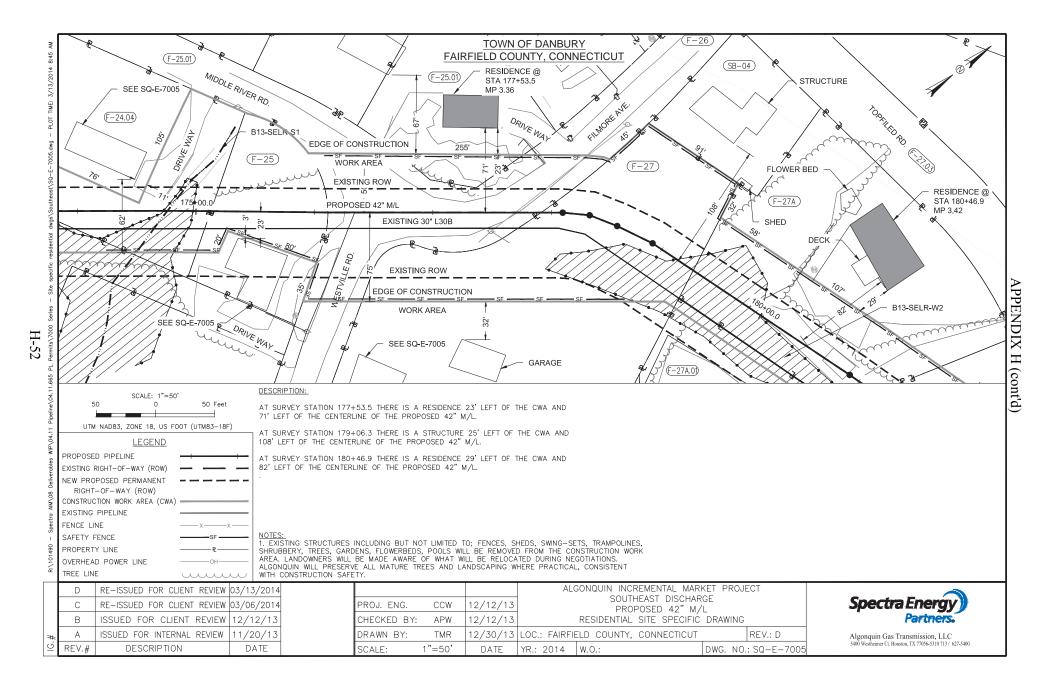


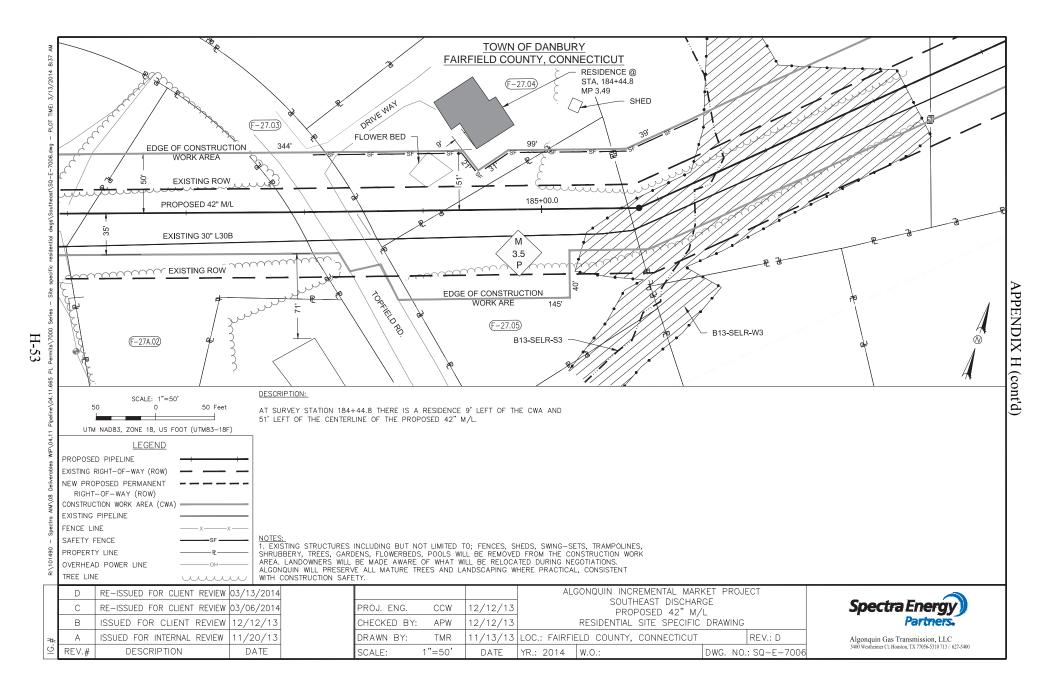


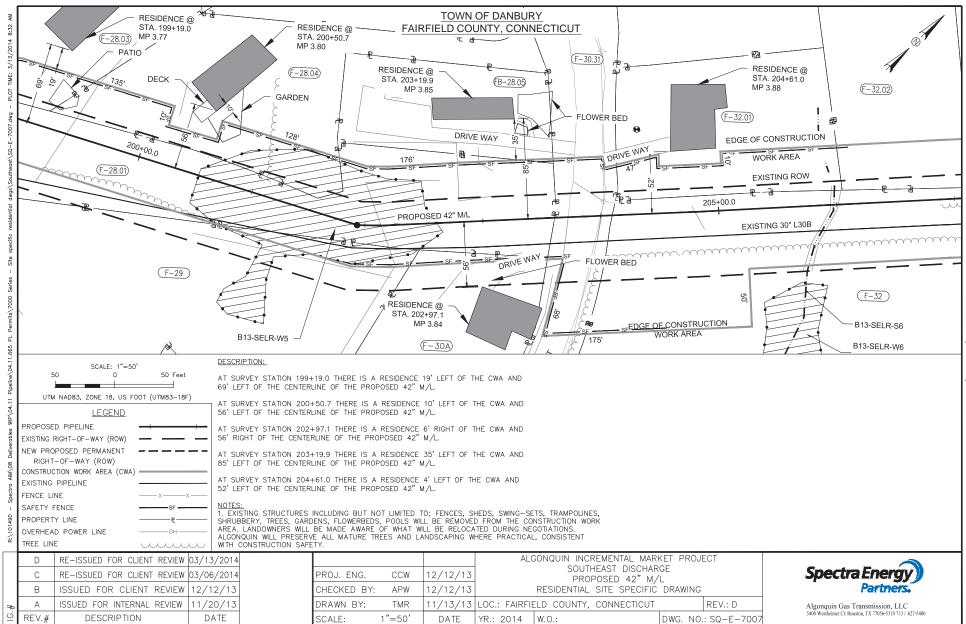


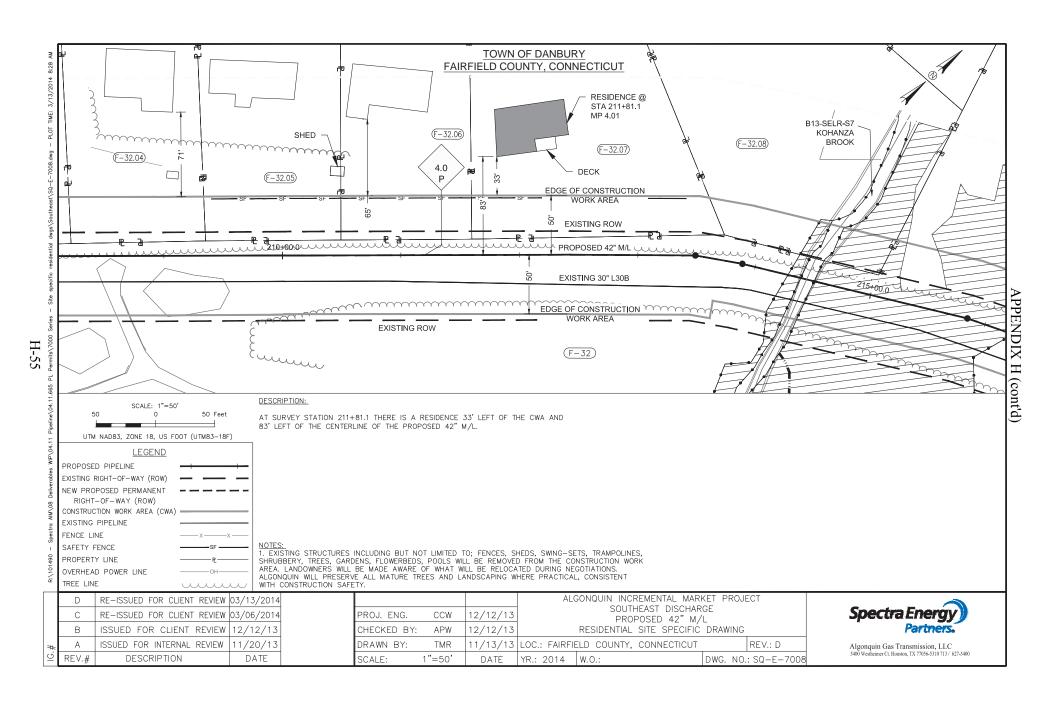


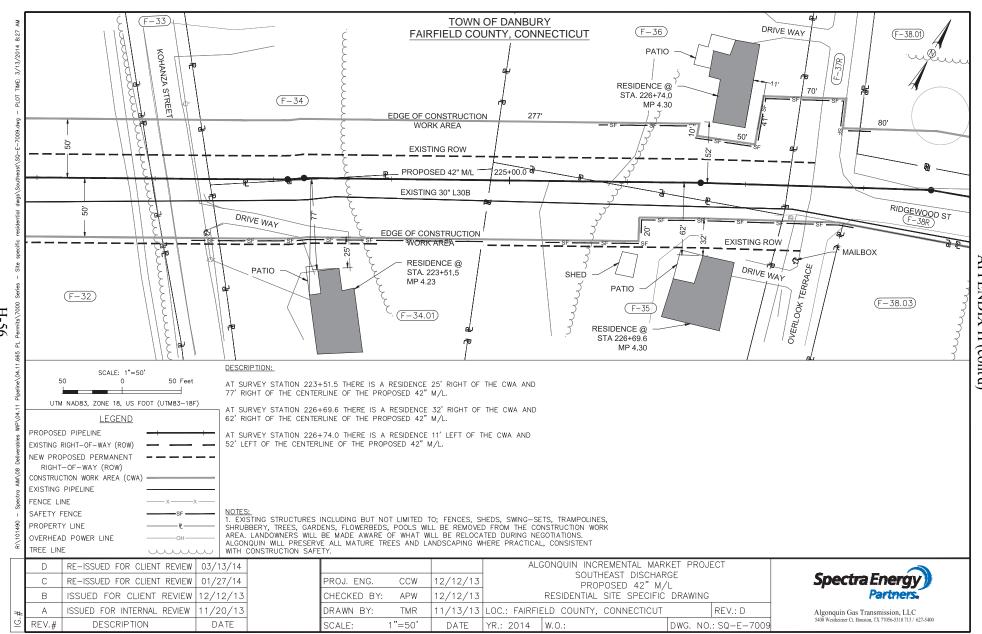


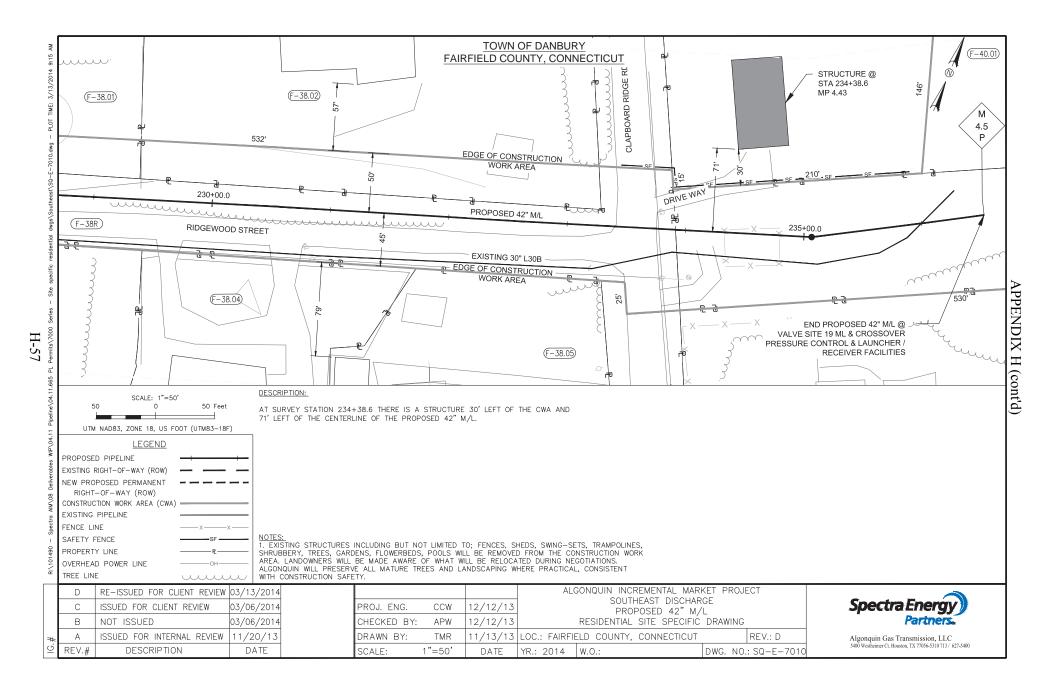


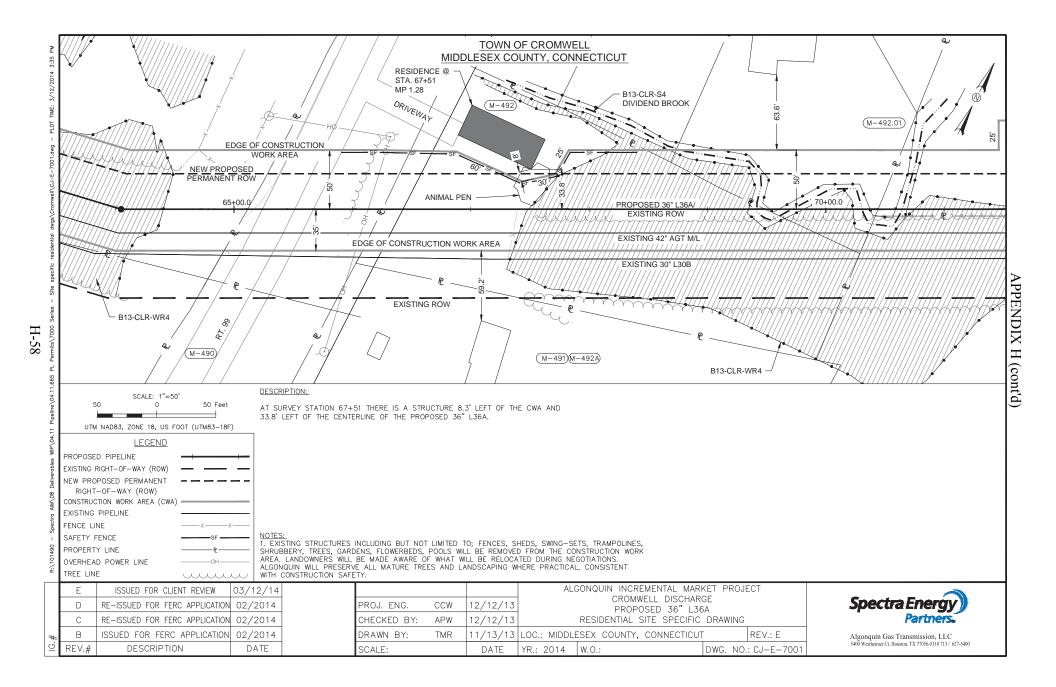


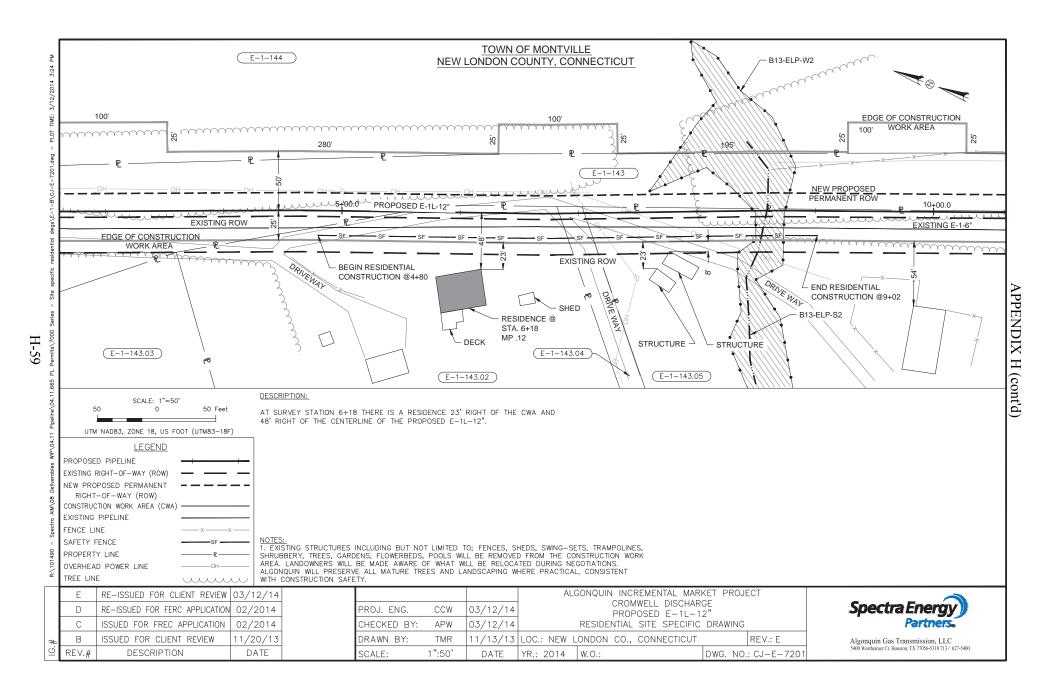














### **GENERAL NOTES:**

- 1. LOCATION OF BUILDING STRUCTURES ARE BASED ON GIS, THEY ARE NOT THE RESULT OF A FIELD SURVEY.
- 2. PROPERTY LINES SHOWN ARE GRAPHICAL AND ARE NOT THE RESULT OF A ON THE GROUND SURVEY OR PLAN OF RECORD
  3. TRENCH SPOIL WILL BE PLACED IN DUMP TRUCKS AND TRANSFERRED OFF SITE, TYPICAL RIGHT—OF—WAY CONFIGURATIONS DO NOT
- TRENCH SPOIL WILL BE PLACED IN DUMP TRUCKS AND TRANSFERRED OFF SITE, TYPICAL RIGHT—OF—WAY CONFIGURATIONS DO NOT APPLY.
- 4. APPROVED TRAFFIC MANAGEMENT PLAN DEVICES AND PUBLIC SAFETY DEVICES WILL REPLACE AND/OR BE UTILIZED IN CONJUNCTION WITH SAFETY FENCING.

			TITLE:	WES	'	-17 BURY LATERA	AL		
			LOC. NORFOLK CO	LOC. NORFOLK COUNTY, MASSACHUSETTS REV.1					
			CHK. BY DP DATE: 3/13/2014 CE000030.002						
REV.#	DESCRIPTION	DATE	DRN. BY VHB	SCALE: 1"	=50′	DWG. BB-P-8	500	1 of 30	



APPENDIX H (cont'd)



#### GENERAL NOTES:

H-61

- 1. LOCATION OF BUILDING STRUCTURES ARE BASED ON GIS, THEY ARE NOT THE RESULT OF A FIELD SURVEY.
- 2. PROPERTY LINES SHOWN ARE GRAPHICAL AND ARE NOT THE RESULT OF A ON THE GROUND SURVEY OR PLAN OF RECORD
- 3. TRENCH SPOIL WILL BE PLACED IN DUMP TRUCKS AND TRANSFERRED OFF SITE, TYPICAL RIGHT-OF-WAY CONFIGURATIONS DO NOT APPLY.
- 4. APPROVED TRAFFIC MANAGEMENT PLAN DEVICES AND PUBLIC SAFETY DEVICES WILL REPLACE AND/OR BE UTILIZED IN CONJUNCTION WITH SAFETY FENCING.

			TITLE:	WES	•	-17 BURY LATERA	AL		
			LOC. NORFOLK COUNTY, MASSACHUSETTS REV.1						
			CHK. BY DP DATE: 3/13/2014 CE000030.002						
REV.#	DESCRIPTION	DATE	DRN. BY VHB   SCALE: 1"=50'   DWG. BB-P-8501					2 of 30	





# NORFOLK COUNTY, MASSACHUSETTS TOWN OF DEDHAM



#### GENERAL NOTES:

- 1. LOCATION OF BUILDING STRUCTURES ARE BASED ON GIS, THEY ARE NOT THE RESULT OF A FIELD SURVEY.
- 2. PROPERTY LINES SHOWN ARE GRAPHICAL AND ARE NOT THE RESULT OF A ON THE GROUND SURVEY OR PLAN OF RECORD
- 3. TRENCH SPOIL WILL BE PLACED IN DUMP TRUCKS AND TRANSFERRED OFF SITE, TYPICAL RIGHT—OF—WAY CONFIGURATIONS DO NOT APPLY.
- 4. APPROVED TRAFFIC MANAGEMENT PLAN DEVICES AND PUBLIC SAFETY DEVICES WILL REPLACE AND/OR BE UTILIZED IN CONJUNCTION WITH SAFETY FENCING.

			TITLE:	WES	•	-17 BURY LATERA	AL		
			LOC. NORFOLK CO	LOC. NORFOLK COUNTY, MASSACHUSETTS REV.1					
			CHK. BY DP		DATE: 3	/13/2014	CE000030.002		
REV.#	DESCRIPTION	DATE	DRN. BY VHB SCALE: 1"=50' DWG. BB-P-8503					3 of 30	





### NORFOLK COUNTY, MASSACHUSETTS TOWN OF DEDHAM



#### GENERAL NOTES:

- 1. LOCATION OF BUILDING STRUCTURES ARE BASED ON GIS, THEY ARE NOT THE RESULT OF A FIELD SURVEY.
- 2. PROPERTY LINES SHOWN ARE GRAPHICAL AND ARE NOT THE RESULT OF A ON THE GROUND SURVEY OR PLAN OF RECORD
- 3. TRENCH SPOIL WILL BE PLACED IN DUMP TRUCKS AND TRANSFERRED OFF SITE, TYPICAL RIGHT-OF-WAY CONFIGURATIONS DO NOT APPLY.
- 4. APPROVED TRAFFIC MANAGEMENT PLAN DEVICES AND PUBLIC SAFETY DEVICES WILL REPLACE AND/OR BE UTILIZED IN CONJUNCTION WITH SAFETY FENCING.

			TITLE:	WES	•	-17 BURY LATERA	<b>AL</b>		
			LOC. NORFOLK COUNTY, MASSACHUSETTS REV.1						
			CHK. BY DP DATE: 3/13/2014 CE000030.002						
REV.#	DESCRIPTION	DATE	DRN. BY VHB SCALE: 1"=50' DWG. BB-P-8504				504	4 of 30	







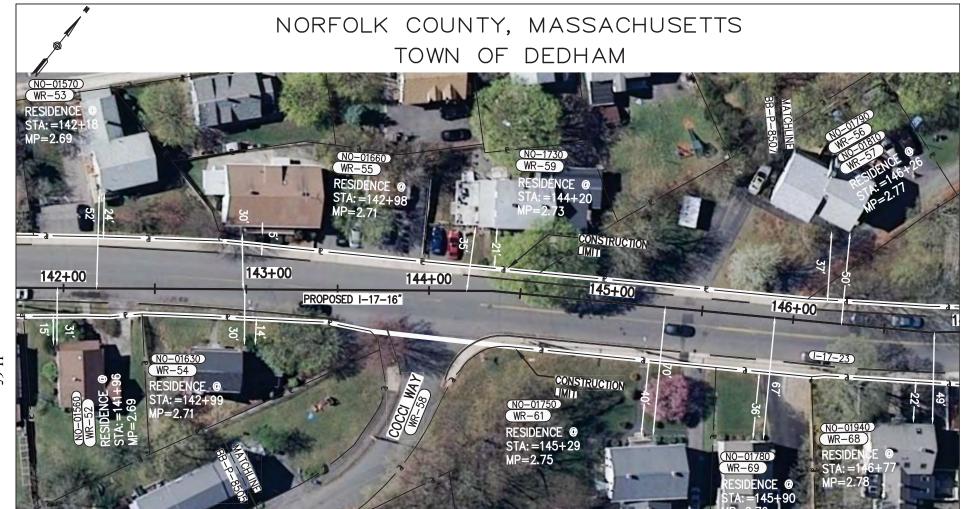
#### **GENERAL NOTES:**

- 1. LOCATION OF BUILDING STRUCTURES ARE BASED ON GIS, THEY ARE NOT THE RESULT OF A FIELD SURVEY.
- 2. PROPERTY LINES SHOWN ARE GRAPHICAL AND ARE NOT THE RESULT OF A ON THE GROUND SURVEY OR PLAN OF RECORD
- 3. TRENCH SPOIL WILL BE PLACED IN DUMP TRUCKS AND TRANSFERRED OFF SITE, TYPICAL RIGHT—OF—WAY CONFIGURATIONS DO NOT APPLY.
- 4. APPROVED TRAFFIC MANAGEMENT PLAN DEVICES AND PUBLIC SAFETY DEVICES WILL REPLACE AND/OR BE UTILIZED IN CONJUNCTION WITH SAFETY FENCING.

			TITLE:	WES	•	-17 BURY LATERA	AL		
			LOC. NORFOLK COUNTY, MASSACHUSETTS REV.1						
			CHK. BY DP DATE: 3/13/2014 CE000030.002						
REV.#	DESCRIPTION	DATE	DRN. BY VHB SCALE: 1"=50' DWG. BB-P-8505				5 of 30		



APPENDIX H (cont'd)



#### GENERAL NOTES:

- 1. LOCATION OF BUILDING STRUCTURES ARE BASED ON GIS, THEY ARE NOT THE RESULT OF A FIELD SURVEY.
- 2. PROPERTY LINES SHOWN ARE GRAPHICAL AND ARE NOT THE RESULT OF A ON THE GROUND SURVEY OR PLAN OF RECORD
- 3. TRENCH SPOIL WILL BE PLACED IN DUMP TRUCKS AND TRANSFERRED OFF SITE, TYPICAL RIGHT-OF-WAY CONFIGURATIONS DO NOT APPLY.
- 4. APPROVED TRAFFIC MANAGEMENT PLAN DEVICES AND PUBLIC SAFETY DEVICES WILL REPLACE AND/OR BE UTILIZED IN CONJUNCTION WITH SAFETY FENCING.

			TITLE:   	WES		-17 BURY LATERA	AL		
			LOC. NORFOLK CO	LOC. NORFOLK COUNTY, MASSACHUSETTS REV.1					
			CHK. BY DP DATE: 3/13/2014 CE000030.002						
REV.#	DESCRIPTION	DATE	DRN. BY VHB	SCALE: 1"	=50'	DWG. BB-P-85	506	6 of 30	



### NORFOLK COUNTY, MASSACHUSETTS TOWN OF DEDHAM



### GENERAL NOTES:

- 1. LOCATION OF BUILDING STRUCTURES ARE BASED ON GIS, THEY ARE NOT THE RESULT OF A FIELD SURVEY.
- 2. PROPERTY LINES SHOWN ARE GRAPHICAL AND ARE NOT THE RESULT OF A ON THE GROUND SURVEY OR PLAN OF RECORD
- 3. TRENCH SPOIL WILL BE PLACED IN DUMP TRUCKS AND TRANSFERRED OFF SITE, TYPICAL RIGHT-OF-WAY CONFIGURATIONS DO NOT APPLY.
- 4. APPROVED TRAFFIC MANAGEMENT PLAN DEVICES AND PUBLIC SAFETY DEVICES WILL REPLACE AND/OR BE UTILIZED IN CONJUNCTION WITH SAFETY FENCING.

			TITLE:   	WES	•	-17 BURY LATERA	AL		
			LOC. NORFOLK CO	LOC. NORFOLK COUNTY, MASSACHUSETTS REV.1					
			CHK. BY DP DATE: 3/13/2014 CE000030.002						
REV.#	DESCRIPTION	DATE	DRN. BY VHB	SCALE: 1"	=50′	DWG. BB-P-85	507	7 of 30	







#### GENERAL NOTES:

- 1. LOCATION OF BUILDING STRUCTURES ARE BASED ON GIS, THEY ARE NOT THE RESULT OF A FIELD SURVEY.
- 2. PROPERTY LINES SHOWN ARE GRAPHICAL AND ARE NOT THE RESULT OF A ON THE GROUND SURVEY OR PLAN OF RECORD
- 3. TRENCH SPOIL WILL BE PLACED IN DUMP TRUCKS AND TRANSFERRED OFF SITE, TYPICAL RIGHT—OF—WAY CONFIGURATIONS DO NOT APPLY.
- 4. APPROVED TRAFFIC MANAGEMENT PLAN DEVICES AND PUBLIC SAFETY DEVICES WILL REPLACE AND/OR BE UTILIZED IN CONJUNCTION WITH SAFETY FENCING.

			TITLE:   	WES	•	-17 BURY LATERA	AL		
			LOC. NORFOLK CO	LOC. NORFOLK COUNTY, MASSACHUSETTS REV.1					
		·	CHK. BY DP DATE: 3/13/2014 CE000030.002						
REV.#	DESCRIPTION	DATE	DRN. BY VHB	SCALE: 1"	=50'	DWG. BB-P-8	508	8 of 30	





### NORFOLK COUNTY, MASSACHUSETTS TOWN OF DEDHAM



### **GENERAL NOTES:**

- 1. LOCATION OF BUILDING STRUCTURES ARE BASED ON GIS, THEY ARE NOT THE RESULT OF A FIELD SURVEY.
- 2. PROPERTY LINES SHOWN ARE GRAPHICAL AND ARE NOT THE RESULT OF A ON THE GROUND SURVEY OR PLAN OF RECORD
- 3. TRENCH SPOIL WILL BE PLACED IN DUMP TRUCKS AND TRANSFERRED OFF SITE, TYPICAL RIGHT-OF-WAY CONFIGURATIONS DO NOT APPLY.
- 4. APPROVED TRAFFIC MANAGEMENT PLAN DEVICES AND PUBLIC SAFETY DEVICES WILL REPLACE AND/OR BE UTILIZED IN CONJUNCTION WITH SAFETY FENCING.

			TITLE:	WES	•	-17 BURY LATERA	<b>AL</b>		
			LOC. NORFOLK COUNTY, MASSACHUSETTS REV.1						
			CHK. BY DP DATE: 3/13/2014 CE000030.002						
REV.#	DESCRIPTION	DATE	DRN. BY VHB SCALE: 1"=50' DWG. BB-P-8509				509	9 of 30	



### NORFOLK COUNTY, MASSACHUSETTS TOWN OF DEDHAM

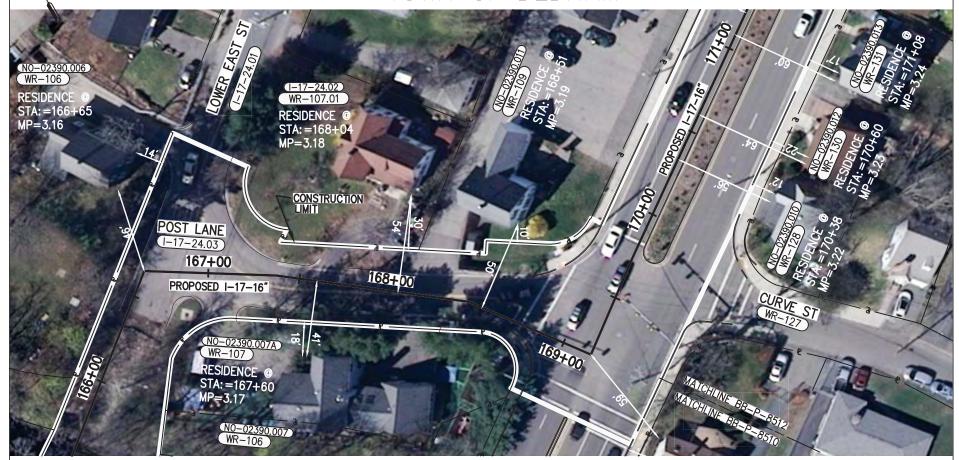


### **GENERAL NOTES:**

- 1. LOCATION OF BUILDING STRUCTURES ARE BASED ON GIS, THEY ARE NOT THE RESULT OF A FIELD SURVEY.
- 2. PROPERTY LINES SHOWN ARE GRAPHICAL AND ARE NOT THE RESULT OF A ON THE GROUND SURVEY OR PLAN OF RECORD
- 3. TRENCH SPOIL WILL BE PLACED IN DUMP TRUCKS AND TRANSFERRED OFF SITE, TYPICAL RIGHT—OF—WAY CONFIGURATIONS DO NOT APPLY.
- 4. APPROVED TRAFFIC MANAGEMENT PLAN DEVICES AND PUBLIC SAFETY DEVICES WILL REPLACE AND/OR BE UTILIZED IN CONJUNCTION WITH SAFETY FENCING.

			TITLE:   	WES	•	-17 BURY LATERA	AL		
			LOC. NORFOLK COUNTY, MASSACHUSETTS REV.1						
			CHK. BY DP DATE: 3/13/2014 CE000030.002						
REV.#	DESCRIPTION	DATE	DRN. BY VHB	SCALE: 1"	=50′	DWG. BB-P-8	510	10 of 30	





#### GENERAL NOTES:

- 1. LOCATION OF BUILDING STRUCTURES ARE BASED ON GIS, THEY ARE NOT THE RESULT OF A FIELD SURVEY.
- 2. PROPERTY LINES SHOWN ARE GRAPHICAL AND ARE NOT THE RESULT OF A ON THE GROUND SURVEY OR PLAN OF RECORD
- 3. TRENCH SPOIL WILL BE PLACED IN DUMP TRUCKS AND TRANSFERRED OFF SITE, TYPICAL RIGHT—OF—WAY CONFIGURATIONS DO NOT APPLY.
- 4. APPROVED TRAFFIC MANAGEMENT PLAN DEVICES AND PUBLIC SAFETY DEVICES WILL REPLACE AND/OR BE UTILIZED IN CONJUNCTION WITH SAFETY FENCING.

			TITLE:   	WES	•	-17 BURY LATERA	AL		
			LOC. NORFOLK CO	LOC. NORFOLK COUNTY, MASSACHUSETTS REV.1					
			CHK. BY DP DATE: 3/13/2014 CE000030.002						
REV.#	DESCRIPTION	DATE	DRN. BY VHB	SCALE: 1"	=50′	DWG. BB-P-85	511	11 of 30	



# NORFOLK COUNTY, MASSACHUSETTS TOWN OF DEDHAM



#### GENERAL NOTES:

- 1. LOCATION OF BUILDING STRUCTURES ARE BASED ON GIS, THEY ARE NOT THE RESULT OF A FIELD SURVEY.
- 2. PROPERTY LINES SHOWN ARE GRAPHICAL AND ARE NOT THE RESULT OF A ON THE GROUND SURVEY OR PLAN OF RECORD
- 3. TRENCH SPOIL WILL BE PLACED IN DUMP TRUCKS AND TRANSFERRED OFF SITE, TYPICAL RIGHT—OF—WAY CONFIGURATIONS DO NOT APPLY.
- 4. APPROVED TRAFFIC MANAGEMENT PLAN DEVICES AND PUBLIC SAFETY DEVICES WILL REPLACE AND/OR BE UTILIZED IN CONJUNCTION WITH SAFETY FENCING.

			TITLE:   	WES	•	-17 BURY LATERA	AL	
			LOC. NORFOLK COUNTY, MASSACHUSETTS REV.1  CHK. BY DP DATE: 3/13/2014 CE000030.002					
REV.#	DESCRIPTION	DATE	DRN. BY VHB SCALE: 1"=50' DWG. BB-P-8512				512	12 of 30



# \*

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### NORFOLK COUNTY, MASSACHUSETTS TOWN OF DEDHAM



### GENERAL NOTES:

- 1. LOCATION OF BUILDING STRUCTURES ARE BASED ON GIS, THEY ARE NOT THE RESULT OF A FIELD SURVEY.
- 2. PROPERTY LINES SHOWN ARE GRAPHICAL AND ARE NOT THE RESULT OF A ON THE GROUND SURVEY OR PLAN OF RECORD
- 3. TRENCH SPOIL WILL BE PLACED IN DUMP TRUCKS AND TRANSFERRED OFF SITE, TYPICAL RIGHT-OF-WAY CONFIGURATIONS DO NOT APPLY.
- 4. APPROVED TRAFFIC MANAGEMENT PLAN DEVICES AND PUBLIC SAFETY DEVICES WILL REPLACE AND/OR BE UTILIZED IN CONJUNCTION WITH SAFETY FENCING.

			TITLE:	I-17 WEST ROXBURY LATERAL						
			LOC. NORFOLK COUNTY, MASSACHUSETTS REV.1  CHK. BY DP DATE: 3/13/2014 CE000030.002							
REV.#	DESCRIPTION	DATE	DRN. BY VHB   SCALE: 1"=50'   DWG. BB-P-8513		13 of 30					



### NORFOLK / SUFFOLK COUNTY, MASSACHUSETTS TOWN OF DEDHAM / CITY OF BOSTON



### GENERAL NOTES:

- 1. LOCATION OF BUILDING STRUCTURES ARE BASED ON GIS, THEY ARE NOT THE RESULT OF A FIELD SURVEY.
- 2. PROPERTY LINES SHOWN ARE GRAPHICAL AND ARE NOT THE RESULT OF A ON THE GROUND SURVEY OR PLAN OF RECORD
- 3. TRENCH SPOIL WILL BE PLACED IN DUMP TRUCKS AND TRANSFERRED OFF SITE, TYPICAL RIGHT-OF-WAY CONFIGURATIONS DO NOT APPLY.
- 4. APPROVED TRAFFIC MANAGEMENT PLAN DEVICES AND PUBLIC SAFETY DEVICES WILL REPLACE AND/OR BE UTILIZED IN CONJUNCTION WITH SAFETY FENCING.

			TITLE:   	I-17 WEST ROXBURY LATERAL						
			LOC. NORFOLK/SUFFOLK COUNTY, MASSACHUSETTS REV.1					REV.1		
		·	CHK. BY DP DATE: 3/13/2014 CE000030.002							
REV.#	DESCRIPTION	DATE	DRN. BY VHB	SCALE: 1"	=50′	DWG. BB-P-85	514	14 of 30		







### **GENERAL NOTES:**

- 1. LOCATION OF BUILDING STRUCTURES ARE BASED ON GIS, THEY ARE NOT THE RESULT OF A FIELD SURVEY.
- 2. PROPERTY LINES SHOWN ARE GRAPHICAL AND ARE NOT THE RESULT OF A ON THE GROUND SURVEY OR PLAN OF RECORD
- 3. TRENCH SPOIL WILL BE PLACED IN DUMP TRUCKS AND TRANSFERRED OFF SITE, TYPICAL RIGHT—OF—WAY CONFIGURATIONS DO NOT APPLY.
- 4. APPROVED TRAFFIC MANAGEMENT PLAN DEVICES AND PUBLIC SAFETY DEVICES WILL REPLACE AND/OR BE UTILIZED IN CONJUNCTION WITH SAFETY FENCING.

			TITLE:   	WES	•	-17 BURY LATERA	AL	
			LOC. SUFFOLK COUNTY, MASSACHUSETTS REV.1  CHK. BY DP DATE: 3/13/2014 CE000030.002					
REV.#	DESCRIPTION	DATE	DRN. BY VHB	SCALE: 1"	=50′	DWG. BB-P-85	515	15 of 30





### SUFFOLK COUNTY, MASSACHUSETTS CITY OF BOSTON



### **GENERAL NOTES:**

- 1. LOCATION OF BUILDING STRUCTURES ARE BASED ON GIS, THEY ARE NOT THE RESULT OF A FIELD SURVEY.
- 2. PROPERTY LINES SHOWN ARE GRAPHICAL AND ARE NOT THE RESULT OF A ON THE GROUND SURVEY OR PLAN OF RECORD
- 3. TRENCH SPOIL WILL BE PLACED IN DUMP TRUCKS AND TRANSFERRED OFF SITE, TYPICAL RIGHT—OF—WAY CONFIGURATIONS DO NOT APPLY.
- 4. APPROVED TRAFFIC MANAGEMENT PLAN DEVICES AND PUBLIC SAFETY DEVICES WILL REPLACE AND/OR BE UTILIZED IN CONJUNCTION WITH SAFETY FENCING.

			TITLE:	I-17 WEST ROXBURY LATERAL						
			LOC. SUFFOLK COUNTY, MASSACHUSETTS REV.1  CHK. BY DP DATE: 3/13/2014 CE000030.002							
		·								
REV.#	DESCRIPTION	DATE	DRN. BY VHB SCALE: 1"=50' DWG. BB-P-8516			516	16 of 30			





# SUFFOLK COUNTY, MASSACHUSETTS CITY OF BOSTON



#### **GENERAL NOTES:**

- 1. LOCATION OF BUILDING STRUCTURES ARE BASED ON GIS, THEY ARE NOT THE RESULT OF A FIELD SURVEY.
- 2. PROPERTY LINES SHOWN ARE GRAPHICAL AND ARE NOT THE RESULT OF A ON THE GROUND SURVEY OR PLAN OF RECORD
- 3. TRENCH SPOIL WILL BE PLACED IN DUMP TRUCKS AND TRANSFERRED OFF SITE, TYPICAL RIGHT—OF—WAY CONFIGURATIONS DO NOT APPLY.
- 4. APPROVED TRAFFIC MANAGEMENT PLAN DEVICES AND PUBLIC SAFETY DEVICES WILL REPLACE AND/OR BE UTILIZED IN CONJUNCTION WITH SAFETY FENCING.

			TITLE:   	I-17 WEST ROXBURY LATERAL						
			LOC. SUFFOLK COUNTY, MASSACHUSETTS REV.1  CHK. BY DP DATE: 3/13/2014 CE000030.002							
REV.#	DESCRIPTION	DATE	DRN. BY VHB	SY VHB   SCALE: 1"=50'   DWG. BB-P-8517		517	17 of 30			





#### GENERAL NOTES:

- 1. LOCATION OF BUILDING STRUCTURES ARE BASED ON GIS, THEY ARE NOT THE RESULT OF A FIELD SURVEY.
- 2. PROPERTY LINES SHOWN ARE GRAPHICAL AND ARE NOT THE RESULT OF A ON THE GROUND SURVEY OR PLAN OF RECORD
- 3. TRENCH SPOIL WILL BE PLACED IN DUMP TRUCKS AND TRANSFERRED OFF SITE, TYPICAL RIGHT—OF—WAY CONFIGURATIONS DO NOT APPLY.
- 4. APPROVED TRAFFIC MANAGEMENT PLAN DEVICES AND PUBLIC SAFETY DEVICES WILL REPLACE AND/OR BE UTILIZED IN CONJUNCTION WITH SAFETY FENCING.

			TITLE:   	I-17 WEST ROXBURY LATERAL						
			LOC. SUFFOLK COUNTY, MASSACHUSETTS REV.1					REV.1		
			CHK. BY DP DATE: 3/13/2014 CE000030.002							
REV.#	DESCRIPTION	DATE	DRN. BY VHB	SCALE: 1"	=50′	DWG. BB-P-85	518	18 of 30		





#### GENERAL NOTES:

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- 1. LOCATION OF BUILDING STRUCTURES ARE BASED ON GIS, THEY ARE NOT THE RESULT OF A FIELD SURVEY.
- 2. PROPERTY LINES SHOWN ARE GRAPHICAL AND ARE NOT THE RESULT OF A ON THE GROUND SURVEY OR PLAN OF RECORD
- 3. TRENCH SPOIL WILL BE PLACED IN DUMP TRUCKS AND TRANSFERRED OFF SITE, TYPICAL RIGHT—OF—WAY CONFIGURATIONS DO NOT APPLY.
- 4. APPROVED TRAFFIC MANAGEMENT PLAN DEVICES AND PUBLIC SAFETY DEVICES WILL REPLACE AND/OR BE UTILIZED IN CONJUNCTION WITH SAFETY FENCING.

			TITLE:	WES	•	-17 BURY LATERA	AL	
			LOC. SUFFOLK COUNTY, MASSACHUSETTS REV.1					
			CHK. BY DP DATE: 3/13/2014 CE000030.002					
REV.#	DESCRIPTION	DATE	DRN. BY VHB SCALE: 1"=50' DWG. BB-P-8519		519	19 of 30		



### SUFFOLK COUNTY, MASSACHUSETTS CITY OF BOSTON



### **GENERAL NOTES:**

- 1. LOCATION OF BUILDING STRUCTURES ARE BASED ON GIS, THEY ARE NOT THE RESULT OF A FIELD SURVEY.
- 2. PROPERTY LINES SHOWN ARE GRAPHICAL AND ARE NOT THE RESULT OF A ON THE GROUND SURVEY OR PLAN OF RECORD
- 3. TRENCH SPOIL WILL BE PLACED IN DUMP TRUCKS AND TRANSFERRED OFF SITE, TYPICAL RIGHT-OF-WAY CONFIGURATIONS DO NOT APPLY.
- 4. APPROVED TRAFFIC MANAGEMENT PLAN DEVICES AND PUBLIC SAFETY DEVICES WILL REPLACE AND/OR BE UTILIZED IN CONJUNCTION WITH SAFETY FENCING.

			TITLE:   	WES	•	-17 BURY LATERA	AL	
			LOC. SUFFOLK COUNTY, MASSACHUSETTS REV.1  CHK. BY DP DATE: 3/13/2014 CE000030.002					
REV.#	DESCRIPTION	DATE	DRN. BY VHB	SCALE: 1"	=50′	DWG. BB-P-85	520	20 of 30



### SUFFOLK COUNTY, MASSACHUSETTS CITY OF BOSTON



### **GENERAL NOTES:**

- 1. LOCATION OF BUILDING STRUCTURES ARE BASED ON GIS, THEY ARE NOT THE RESULT OF A FIELD SURVEY.
- 2. PROPERTY LINES SHOWN ARE GRAPHICAL AND ARE NOT THE RESULT OF A ON THE GROUND SURVEY OR PLAN OF RECORD
- 3. TRENCH SPOIL WILL BE PLACED IN DUMP TRUCKS AND TRANSFERRED OFF SITE, TYPICAL RIGHT—OF—WAY CONFIGURATIONS DO NOT APPLY.
- 4. APPROVED TRAFFIC MANAGEMENT PLAN DEVICES AND PUBLIC SAFETY DEVICES WILL REPLACE AND/OR BE UTILIZED IN CONJUNCTION WITH SAFETY FENCING.

			TITLE:   	I-17 WEST ROXBURY LATERAL						
			LOC. SUFFOLK COUNTY, MASSACHUSETTS REV.1  CHK. BY DP DATE: 3/13/2014 CE000030.002							
REV.#	DESCRIPTION	DATE	DRN. BY VHB	SCALE: 1"	=50′	DWG. BB-P-85	521	21 of 30		





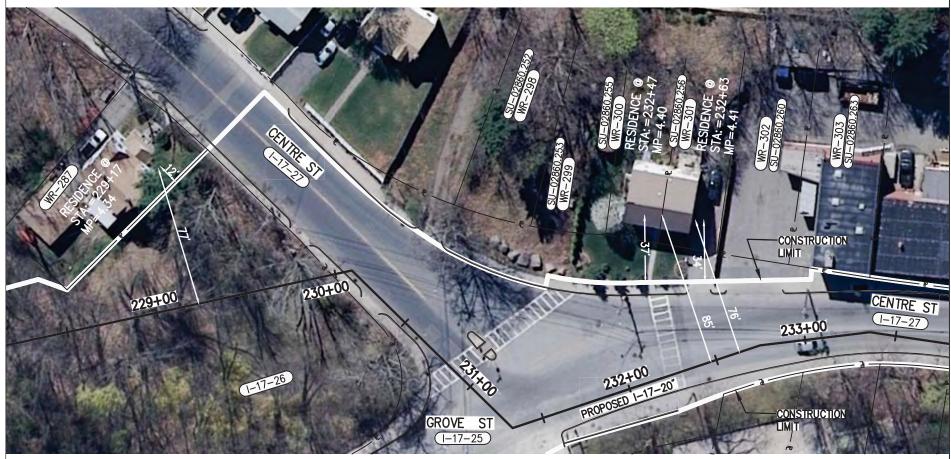
#### **GENERAL NOTES:**

- 1. LOCATION OF BUILDING STRUCTURES ARE BASED ON GIS, THEY ARE NOT THE RESULT OF A FIELD SURVEY.
- 2. PROPERTY LINES SHOWN ARE GRAPHICAL AND ARE NOT THE RESULT OF A ON THE GROUND SURVEY OR PLAN OF RECORD
- 3. TRENCH SPOIL WILL BE PLACED IN DUMP TRUCKS AND TRANSFERRED OFF SITE, TYPICAL RIGHT—OF—WAY CONFIGURATIONS DO NOT APPLY.
- 4. APPROVED TRAFFIC MANAGEMENT PLAN DEVICES AND PUBLIC SAFETY DEVICES WILL REPLACE AND/OR BE UTILIZED IN CONJUNCTION WITH SAFETY FENCING.

			TITLE:	I-17 WEST ROXBURY LATERAL						
			LOC. SUFFOLK COUNTY, MASSACHUSETTS REV.1					REV.1		
			CHK. BY DP DATE: 3/13/2014 CE000030.002							
REV.#	DESCRIPTION	DATE	DRN. BY VHB	SCALE: 1"	=50′	DWG. BB-P-85	522	22 of 30		



APPENDIX H (cont'd)



#### **GENERAL NOTES:**

- 1. LOCATION OF BUILDING STRUCTURES ARE BASED ON GIS, THEY ARE NOT THE RESULT OF A FIELD SURVEY.
- 2. PROPERTY LINES SHOWN ARE GRAPHICAL AND ARE NOT THE RESULT OF A ON THE GROUND SURVEY OR PLAN OF RECORD
- 3. TRENCH SPOIL WILL BE PLACED IN DUMP TRUCKS AND TRANSFERRED OFF SITE, TYPICAL RIGHT—OF—WAY CONFIGURATIONS DO NOT APPLY.
- 4. APPROVED TRAFFIC MANAGEMENT PLAN DEVICES AND PUBLIC SAFETY DEVICES WILL REPLACE AND/OR BE UTILIZED IN CONJUNCTION WITH SAFETY FENCING.

			TITLE:   	I-17 WEST ROXBURY LATERAL						
			LOC. SUFFOLK COUNTY, MASSACHUSETTS REV.1 CHK. BY DP DATE: 3/13/2014 CE000030.002							
REV.#	DESCRIPTION	DATE	DRN. BY VHB SCALE: 1"=50' DWG. BB-P-8523		523	23 of 30				



APPENDIX H (cont'd)



#### GENERAL NOTES:

- 1. LOCATION OF BUILDING STRUCTURES ARE BASED ON GIS, THEY ARE NOT THE RESULT OF A FIELD SURVEY.
- 2. PROPERTY LINES SHOWN ARE GRAPHICAL AND ARE NOT THE RESULT OF A ON THE GROUND SURVEY OR PLAN OF RECORD
- 3. TRENCH SPOIL WILL BE PLACED IN DUMP TRUCKS AND TRANSFERRED OFF SITE, TYPICAL RIGHT-OF-WAY CONFIGURATIONS DO NOT APPLY.
- 4. APPROVED TRAFFIC MANAGEMENT PLAN DEVICES AND PUBLIC SAFETY DEVICES WILL REPLACE AND/OR BE UTILIZED IN CONJUNCTION WITH SAFETY FENCING.

			TITLE:   	WES	•	-17 BURY LATERA	AL		
			LOC. SUFFOLK CO	UNTY, MAS	SACHUSE <sup>-</sup>	ΓTS		REV.1	
			CHK. BY DP						
REV.#	DESCRIPTION	DATE	DRN. BY VHB	SCALE: 1"	=50′	DWG. BB-P-85	524	24 of 30	



APPENDIX H (cont'd)





#### **GENERAL NOTES:**

- 1. LOCATION OF BUILDING STRUCTURES ARE BASED ON GIS, THEY ARE NOT THE RESULT OF A FIELD SURVEY.
- 2. PROPERTY LINES SHOWN ARE GRAPHICAL AND ARE NOT THE RESULT OF A ON THE GROUND SURVEY OR PLAN OF RECORD
- 3. TRENCH SPOIL WILL BE PLACED IN DUMP TRUCKS AND TRANSFERRED OFF SITE, TYPICAL RIGHT—OF—WAY CONFIGURATIONS DO NOT APPLY.
- 4. APPROVED TRAFFIC MANAGEMENT PLAN DEVICES AND PUBLIC SAFETY DEVICES WILL REPLACE AND/OR BE UTILIZED IN CONJUNCTION WITH SAFETY FENCING.

			TITLE:   	WES	'	-17 BURY LATERA	AL		
			LOC. SUFFOLK CO	UNTY, MAS	SACHUSE <sup>*</sup>	TTS		REV.1	
			CHK. BY DP						
REV.#	DESCRIPTION	DATE	DRN. BY VHB	SCALE: 1"	=50'	DWG. BB-P-8	525	25 of 30	





### SUFFOLK COUNTY, MASSACHUSETTS CITY OF BOSTON



#### GENERAL NOTES:

- 1. LOCATION OF BUILDING STRUCTURES ARE BASED ON GIS, THEY ARE NOT THE RESULT OF A FIELD SURVEY.
- 2. PROPERTY LINES SHOWN ARE GRAPHICAL AND ARE NOT THE RESULT OF A ON THE GROUND SURVEY OR PLAN OF RECORD
- 3. TRENCH SPOIL WILL BE PLACED IN DUMP TRUCKS AND TRANSFERRED OFF SITE, TYPICAL RIGHT—OF—WAY CONFIGURATIONS DO NOT APPLY.
- 4. APPROVED TRAFFIC MANAGEMENT PLAN DEVICES AND PUBLIC SAFETY DEVICES WILL REPLACE AND/OR BE UTILIZED IN CONJUNCTION WITH SAFETY FENCING.

			TITLE:   	WES	•	-17 BURY LATERA	AL		
			LOC. SUFFOLK CO	LOC. SUFFOLK COUNTY, MASSACHUSETTS REV.1					
			CHK. BY DP	,					
REV.#	DESCRIPTION	DATE	DRN. BY VHB	SCALE: 1"	=50′	DWG. BB-P-8	526	26 of 30	



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## SUFFOLK COUNTY, MASSACHUSETTS CITY OF BOSTON



### GENERAL NOTES:

- 1. LOCATION OF BUILDING STRUCTURES ARE BASED ON GIS, THEY ARE NOT THE RESULT OF A FIELD SURVEY.
- 2. PROPERTY LINES SHOWN ARE GRAPHICAL AND ARE NOT THE RESULT OF A ON THE GROUND SURVEY OR PLAN OF RECORD
- 3. TRENCH SPOIL WILL BE PLACED IN DUMP TRUCKS AND TRANSFERRED OFF SITE, TYPICAL RIGHT-OF-WAY CONFIGURATIONS DO NOT APPLY.
- 4. APPROVED TRAFFIC MANAGEMENT PLAN DEVICES AND PUBLIC SAFETY DEVICES WILL REPLACE AND/OR BE UTILIZED IN CONJUNCTION WITH SAFETY FENCING.

			TITLE:	WES <sup>-</sup>	•	-17 BURY LATERA	<b>AL</b>		
			LOC. SUFFOLK CO	UNTY, MASS	SACHUSE <sup>1</sup>	TTS		REV.1	
			CHK. BY DP						
REV.#	DESCRIPTION	DATE	DRN. BY VHB	SCALE: 1":	=50′	DWG. BB-P-85	527	27 of 30	

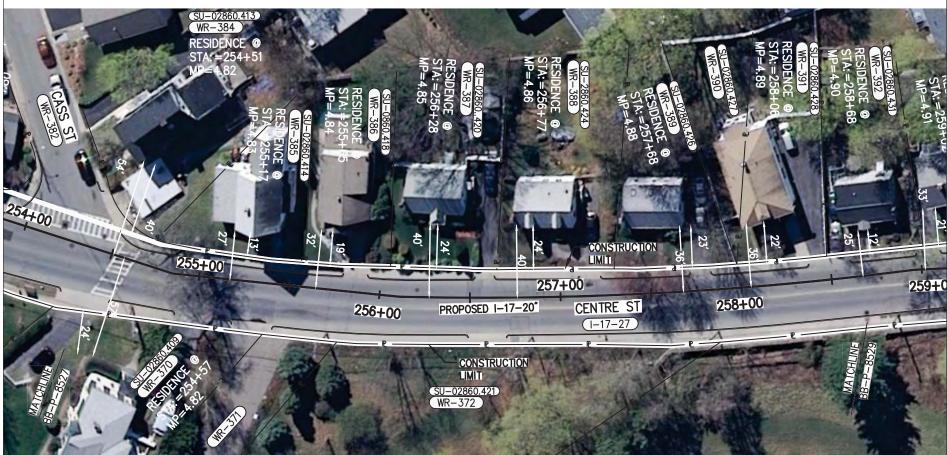


APPENDIX H (cont'd)

### <del>-</del>

H-87

### SUFFOLK COUNTY, MASSACHUSETTS CITY OF BOSTON



#### GENERAL NOTES:

- 1. LOCATION OF BUILDING STRUCTURES ARE BASED ON GIS, THEY ARE NOT THE RESULT OF A FIELD SURVEY.
- 2. PROPERTY LINES SHOWN ARE GRAPHICAL AND ARE NOT THE RESULT OF A ON THE GROUND SURVEY OR PLAN OF RECORD
- 3. TRENCH SPOIL WILL BE PLACED IN DUMP TRUCKS AND TRANSFERRED OFF SITE, TYPICAL RIGHT—OF—WAY CONFIGURATIONS DO NOT APPLY.
- 4. APPROVED TRAFFIC MANAGEMENT PLAN DEVICES AND PUBLIC SAFETY DEVICES WILL REPLACE AND/OR BE UTILIZED IN CONJUNCTION WITH SAFETY FENCING.

			TITLE:	WES	•	-17 BURY LATERA	AL		
			LOC. SUFFOLK CO	LOC. SUFFOLK COUNTY, MASSACHUSETTS REV.1					
			CHK. BY DP						
REV.#	DESCRIPTION	DATE	DRN. BY VHB	SCALE: 1"	=50′	DWG. BB-P-8	528	28 of 30	





#### GENERAL NOTES:

- 1. LOCATION OF BUILDING STRUCTURES ARE BASED ON GIS, THEY ARE NOT THE RESULT OF A FIELD SURVEY.
- 2. PROPERTY LINES SHOWN ARE GRAPHICAL AND ARE NOT THE RESULT OF A ON THE GROUND SURVEY OR PLAN OF RECORD
- 3. TRENCH SPOIL WILL BE PLACED IN DUMP TRUCKS AND TRANSFERRED OFF SITE, TYPICAL RIGHT—OF—WAY CONFIGURATIONS DO NOT APPLY.
- 4. APPROVED TRAFFIC MANAGEMENT PLAN DEVICES AND PUBLIC SAFETY DEVICES WILL REPLACE AND/OR BE UTILIZED IN CONJUNCTION WITH SAFETY FENCING.

			TITLE:	WES		-17 BURY LATERA	AL			
			LOC. SUFFOLK CO	UNTY, MAS	SACHUSE <sup>*</sup>	TTS		REV.1		
			CHK. BY DP							
REV.#	DESCRIPTION	DATE	DRN. BY VHB	SCALE: 1"	=50′	DWG. BB-P-8	529	29 of 30		



APPENDIX H (cont'd)





#### **GENERAL NOTES:**

- 1. LOCATION OF BUILDING STRUCTURES ARE BASED ON GIS, THEY ARE NOT THE RESULT OF A FIELD SURVEY.
- 2. PROPERTY LINES SHOWN ARE GRAPHICAL AND ARE NOT THE RESULT OF A ON THE GROUND SURVEY OR PLAN OF RECORD
- 3. TRENCH SPOIL WILL BE PLACED IN DUMP TRUCKS AND TRANSFERRED OFF SITE, TYPICAL RIGHT—OF—WAY CONFIGURATIONS DO NOT APPLY.
- 4. APPROVED TRAFFIC MANAGEMENT PLAN DEVICES AND PUBLIC SAFETY DEVICES WILL REPLACE AND/OR BE UTILIZED IN CONJUNCTION WITH SAFETY FENCING.

			TITLE:	WES	•	-17 BURY LATERA	AL	
			LOC. SUFFOLK CO	JNTY, MAS	SACHUSE <sup>1</sup>	ΓTS		REV.1
		·	CHK. BY DP	·	DATE: 3	/13/2014	CE000030.002	
REV.#	DESCRIPTION	DATE	DRN. BY VHB	SCALE: 1"	=50′	DWG. BB-P-85	530	30 of 30



APPENDIX H (cont'd)

# APPENDIX I WATERBODY CROSSING TABLE

				TABLE I-1						
			Waterbodie	es Crossed by	the AIM Pro	ject				
Facility, Waterbody ID	Waterbody Name	Milepost <sup>a</sup>	Municipality	County	Crossing Width (Feet) <sup>b</sup>	Flow Type	FERC Classification °	Fishery Type	State Water Quality Classification <sup>d</sup>	Proposed Crossing Method <sup>e</sup>
PIPELINE FACILITIES										
Take-up And Relay										
Haverstraw to Stony Po	pint									
B13-RLR-S1C	UNT to Mahwah River	0.29	Haverstraw	Rockland	1	I	Minor	Coldwater (Trout)	A(T)	Dry Crossing
B13-RLR-S2B	UNT to Minisceongo Creek	0.61	Haverstraw	Rockland	1.5	I	Minor	Coldwater	C(T)	Dry Crossing
B13-RLR-S3	UNT to Minisceongo Creek	0.81	Haverstraw	Rockland	1	I	Minor	Coldwater	C(T)	Dry Crossing
B13-RLR-S3A	UNT to Minisceongo Creek	0.81	Haverstraw	Rockland	1	I	Minor	Coldwater	C(T)	Dry Crossing
B13-RLR-S3E	UNT to Minisceongo Creek	0.90	Haverstraw	Rockland	0.5	I	Minor	Coldwater	C(T)	Dry Crossing
B13-RLR-S3D	UNT to Minisceongo Creek	0.90	Haverstraw	Rockland	4	Р	Minor	Coldwater (Trout)	C(T)	Dry Crossing
B13-RLR-S3F	UNT to Minisceongo Creek	0.92	Haverstraw	Rockland	1	I	Minor	Coldwater	C(T)	Dry Crossing
B13-RLR-S3D	UNT to Minisceongo Creek	0.93	Haverstraw	Rockland	4	Р	Minor	Coldwater (Trout)	C(T)	Dry Crossing
B13-RLR-S3G	UNT to Minisceongo Creek	1.00	Haverstraw	Rockland	1	I	Minor	Coldwater	C(T)	Dry Crossing
B13-RLR-S3H	UNT to Minisceongo Creek	1.00	Haverstraw	Rockland	0.5	I	Minor	Coldwater	C(T)	Dry Crossing
B13-RLR-S3D	UNT to Minisceongo Creek	1.00	Haverstraw	Rockland	4	Р	Minor	Coldwater (Trout)	C(T)	Dry Crossing
B13-RLR-S3D	UNT to Minisceongo Creek	1.07	Haverstraw	Rockland	4	Р	Minor	Coldwater (Trout)	C(T)	Dry Crossing
B13-RLR-S3I	UNT to Minisceongo Creek	1.08	Haverstraw	Rockland	2	Р	Minor	Coldwater	C(T)	Dry Crossing
B13-RLR-S3J	Minisceongo Creek	1.09	Haverstraw	Rockland	20	Р	Intermediate	Coldwater (Trout)	C(T)	Dry Crossing
B13-RLR-S4	UNT to Minisceongo Creek	1.65	Stony Point	Rockland	6	Р	Minor	Coldwater	С	Dry Crossing
B13-RLR-S6	UNT to Minisceongo Creek	2.24	Stony Point	Rockland	0.5	I	Minor	Coldwater	С	Dry Crossing

				TABLE I-1 (cor	nt'd)					
			Waterbodi	es Crossed by	the AIM Pro	ject				
Facility, Waterbody ID	Waterbody Name	Milepost <sup>a</sup>	Municipality	County	Crossing Width (Feet) <sup>b</sup>	Flow Type	FERC Classification °	Fishery Type	State Water Quality Classification <sup>d</sup>	Proposed Crossing Method <sup>e</sup>
B13-RLR-S10	Cedar Pond Brook	2.99	Stony Point	Rockland	30	Р	Intermediate	Coldwater (Trout Spawning)	C(TS)	Dry Crossing
B13-RLR-S10A	UNT to Cedar Pond Brook	3.04	Stony Point	Rockland	6	Р	Minor	Coldwater (Trout Spawning)	C(TS)	Dry Crossing
Stony Point to Yorktown										
A13-SPLR-S1	UNT to Cedar Pond Brook	0.37	Stony Point Rockland	Rockland	25	Р	Intermediate	Coldwater	Α	Dry Crossing
B13-SPLR-S207	UNT to Hudson River	2.90	Stony Point Rockland	Rockland	14	I	Intermediate	Warmwater	В	Dry Crossing
Hudson River	Hudson River	3.21	Stony Point	Rockland Westchester	3,538	Р	Major	Saline	SB	HDD
B13-SPLR-S17	Dickey Brook	5.66	Cortlandt	Westchester	30	Р	Intermediate	Saline	SC	Dry Crossing
B13-SPLR-S2	Dickey Brook	5.97	Cortlandt	Westchester	13	Р	Intermediate	Warmwater	С	Dry Crossing
B13-SPLR-S3A	UNT to Dickey Brook	6.02	Cortlandt	Westchester	1	1	Minor	Warmwater	С	Dry Crossing
B13-SPLR-S3	UNT to Dickey Brook	6.03	Cortlandt	Westchester	1	1	Minor	Warmwater	С	Dry Crossing
B13-SPLR-S7	UNT to Dickey Brook	6.65	Cortlandt	Westchester	3	Р	Minor	Warmwater	В	Dry Crossing
B13-SPLR-S7	UNT to Dickey Brook	6.66	Cortlandt	Westchester	3	Р	Minor	Warmwater	В	Dry Crossing
B13-SPLR-S13	UNT to Furnace Brook	7.59	Cortlandt	Westchester	2	I	Minor	Warmwater	В	Dry Crossing
B13-SPLR-S13A	UNT to Furnace Brook	7.61	Cortlandt	Westchester	3	I	Minor	Warmwater	В	Dry Crossing
B13-SPLR-S13B	UNT to Furnace Brook	7.89	Cortlandt	Westchester	1	I	Minor	Warmwater	В	Dry Crossing
B13-SPLR-S14	UNT to Furnace Brook	8.25	Cortlandt	Westchester	2	Р	Minor	Warmwater	В	Dry Crossing
B13-SPLR-S18	UNT to Furnace Brook	8.83	Cortlandt	Westchester	5	I	Minor	Warmwater	С	Dry Crossing
B13-SPLR-S43	UNT to Peekskill Hollow Creek	9.59	Cortlandt	Westchester	3	I	Minor	Warmwater	С	Dry Crossing
B13-SPLR-S21A	UNT to Hunter Brook	10.34	Cortlandt	Westchester	5	Р	Minor	Warmwater	С	Dry Crossing
B13-SPLR-S21B	UNT to Hunter Brook	10.36	Cortlandt	Westchester	4	1	Minor	Warmwater	С	Dry Crossing
B13-SPLR-S22	UNT to Hunter Brook	10.57	Cortlandt	Westchester	5	1	Minor	Warmwater	С	Dry Crossing
B13-SPLR-S25	UNT to Hunter Brook	10.80	Cortlandt	Westchester	4	Р	Minor	Warmwater	С	Dry Crossing

				TABLE I-1 (cor	nt'd)					
			Waterbodi	es Crossed by	the AIM Pro	ject				
Facility, Waterbody ID	Waterbody Name	Milepost <sup>a</sup>	Municipality	County	Crossing Width (Feet) <sup>b</sup>	Flow Type	FERC Classification °	Fishery Type	State Water Quality Classification <sup>d</sup>	Proposed Crossing Method <sup>e</sup>
B13-SPLR-S26	UNT to Hunter Brook	11.13	Yorktown	Westchester	6	Р	Minor	Warmwater	С	Dry Crossing
B13-SPLR-S27	UNT to Hunter Brook	11.51	Yorktown	Westchester	7	Р	Minor	Warmwater	С	Dry Crossing
Southeast to MLV 19										
B13-SELR-S8	Sawmill River	0.27	Danbury	Fairfield	8	Р	Minor	Warmwater	AA	Dry Crossing
A13-SELR-S1	UNT to Still River	1.04	Danbury	Fairfield	0.5	I	Minor	Warmwater	AA	Dry Crossing
A13-SELR-S3	UNT to Still River	1.25	Danbury	Fairfield	9	I	Minor	Warmwater	AA	Dry Crossing
B13-SELR-S12 f	Still River	1.74	Danbury	Fairfield	12	Р	Intermediate	Warmwater (Trout)	AA	HDD
A13-SELR-S6	UNT to Boggs Pond Brook	3.03	Danbury	Fairfield	6	I	Minor	Warmwater	AA	Dry Crossing
B13-SELR-S1	UNT to Boggs Pond Brook	3.33	Danbury	Fairfield	2	I	Minor	Warmwater	AA	Dry Crossing
B13-SELR-S3	UNT to Boggs Pond Brook	3.55	Danbury	Fairfield	1	I	Minor	Warmwater	AA	Dry Crossing
B13-SELR-S4	Boggs Pond Brook	3.72	Danbury	Fairfield	8	Р	Minor	Warmwater	AA	Dry Crossing
B13-SELR-S6	UNT to Kohanza Brook	3.92	Danbury	Fairfield	4	I	Minor	Warmwater	AA	Dry Crossing
B13-SELR-S7	Kohanza Brook	4.08	Danbury	Fairfield	12	I	Minor	Warmwater	AA	Dry Crossing
E-1 System Lateral										
A13-ELR-S1	Susquetonscut Brook	0.67	Lebanon	New London	37	Р	Intermediate	Warmwater (Trout)	Α	Dry Crossing
A13-ELR-S2	UNT to Susquetonscut Brk	0.70	Lebanon	New London	1.5	I	Minor	Warmwater	Α	Dry Crossing
B13-ELR-S1	UNT to Susquetonscut Brk	1.21	Lebanon	New London	0.5	I	Minor	Warmwater	Α	Dry Crossing
B13-ELR-S4B	UNT to Susquetonscut Brk	1.82	Lebanon	New London	0.75	I	Minor	Warmwater	Α	Dry Crossing
B13-ELR-S4A	UNT to Susquetonscut Brk	1.85	Lebanon	New London	3	I	Minor	Warmwater	Α	Dry Crossing
A13-ELR-S2A	Susquetonscut Brook	2.01	Lebanon	New London	29	Р	Intermediate	Warmwater (Trout)	Α	Dry Crossing
A13-ELR-S2E	UNT to Susquetonscut Brk	2.14	Lebanon	New London	2	I	Minor	Warmwater	Α	Dry Crossing
A13-ELR-S2C	UNT to Susquetonscut Brk	2.14	Lebanon	New London	2	I	Minor	Warmwater	Α	Dry Crossing
A13-ELR-S2D	UNT to Susquetonscut Brk	2.16	Lebanon	New London	2	1	Minor	Warmwater	Α	Dry Crossing

				TABLE I-1 (co	ont'd)					
	Waterbodies Crossed by the AIM Project									
Facility, Waterbody ID	Waterbody Name	Milepost <sup>a</sup>	Municipality	County	Crossing Width (Feet) <sup>b</sup>	Flow Type	FERC Classification <sup>c</sup>	Fishery Type	State Water Quality Classification <sup>d</sup>	Proposed Crossing Method <sup>e</sup>
A13-ELR-S2B	UNT to Susquetonscut Brk	2.16	Lebanon	New London	2	I	Minor	Warmwater	Α	Dry Crossing
A13-ELR-S3	UNT to Susquetonscut Brk	2.34	Lebanon	New London	1	I	Minor	Warmwater	Α	Dry Crossing
A13-ELR-S4	UNT to Susquetonscut Brk	2.47	Lebanon	New London	1	I	Minor	Warmwater	Α	Dry Crossing
A13-ELR-S6A	UNT to Susquetonscut Brk	3.04	Lebanon	New London	1	I	Minor	Warmwater	Α	Dry Crossing
A13-ELR-S8B	UNT to Susquetonscut Brk	3.24	Lebanon	New London	11	Р	Intermediate	Warmwater	Α	Dry Crossing
A13-ELR-S8A	UNT to Susquetonscut Brk	3.15	Lebanon	New London	1	I	Minor	Warmwater	Α	Dry Crossing
A13-ELR-S9B	UNT to Susquetonscut Brk	3.52	Lebanon	New London	7	Р	Minor	Warmwater	Α	Dry Crossing
A13-ELR-S10	UNT to Susquetonscut Brk	3.76	Lebanon	New London	4	I	Minor	Warmwater	Α	Dry Crossing
B13-ELR-S16	UNT to Susquetonscut Brk	4.33	Franklin	New London	1	I	Minor	Warmwater	Α	Dry Crossing
B13-ELR-S15	UNT to Susquetonscut Brk	4.47	Franklin	New London	4	I	Minor	Warmwater	Α	Dry Crossing
B13-ELR-S14	UNT to Susquetonscut Brk	4.68	Franklin	New London	5	Р	Minor	Warmwater	Α	Dry Crossing
B13-ELR-S13A	UNT to Susquetonscut Brk	4.80	Franklin	New London	3	I	Minor	Warmwater	Α	Dry Crossing
B13-ELR-S13B	UNT to Susquetonscut Brk	4.80	Franklin	New London	2	I	Minor	Warmwater	Α	Dry Crossing
B13-ELR-S11	UNT to Susquetonscut Brk	4.91	Franklin	New London	1.5	I	Minor	Warmwater	Α	Dry Crossing
B13-ELR-S10	UNT to Susquetonscut Brk	4.93	Franklin	New London	1.5	I	Minor	Warmwater	Α	Dry Crossing
B13-ELR-S9C	UNT to Susquetonscut Brk	5.04	Franklin	New London	2	I	Minor	Warmwater	Α	Dry Crossing
B13-ELR-S9B	UNT to Susquetonscut Brk	5.26	Franklin	New London	3	I	Minor	Warmwater	Α	Dry Crossing
B13-ELR-S9	UNT to Susquetonscut Brk	5.51	Franklin	New London	1	I	Minor	Warmwater	Α	Dry Crossing
B13-ELR-S5A	UNT to Susquetonscut Brk	5.82	Franklin	New London	2	I	Minor	Warmwater (Trout)	Α	Dry Crossing

				TABLE I-1 (co	nt'd)					
			Waterbodie	es Crossed by	the AIM Pro	ject				
Facility, Waterbody ID	Waterbody Name	Milepost <sup>a</sup>	Municipality	County	Crossing Width (Feet) <sup>b</sup>	Flow Type	FERC Classification °	Fishery Type	State Water Quality Classification <sup>d</sup>	Proposed Crossing Method <sup>e</sup>
B13-ELR-S5B	Susquetonscut Brook	5.83	Franklin	New London	37	Р	Intermediate	Warmwater (Trout)	Α	Dry Crossing
A13-ELR-S11	UNT to Susquetonscut Brk	6.10	Franklin	New London	1	I	Minor	Warmwater	Α	Dry Crossing
A13-ELR-S50	UNT to Susquetonscut Brk	6.52	Franklin	New London	17	1	Intermediate	Warmwater	Α	Dry Crossing
B13-ELR-S23	UNT to Susquetonscut Brk	7.16	Franklin	New London	5	1	Minor	Warmwater	Α	Dry Crossing
B13-ELR-S22 f	Johnnycake Brook (Ponded)	7.28	Franklin	New London	56	N/A	Intermediate	Warmwater	Α	Dry Crossing
B13-ELR-S19	UNT to Elisha Brook	8.32	Franklin	New London	1	1	Minor	Coldwater (Trout)	Α	Dry Crossing
B13-ELR-S18	Elisha Brook	8.51	Norwich	New London	6	Р	Minor	Coldwater (Trout)	Α	Dry Crossing
B13-ELR-S25	UNT to Norwichtown Brook	8.83	Norwich	New London	2	Р	Minor	Warmwater	Α	Dry Crossing
B13-ELR-S25A	UNT to Norwichtown Brook	8.87	Norwich	New London	1	E	Minor	Warmwater	Α	Dry Crossing
B13-ELR-S24	UNT to Norwichtown Brook	8.92	Norwich	New London	1	E	Minor	Warmwater	Α	Dry Crossing
B13-ELR-S17	UNT to Norwichtown Brook	9.06	Norwich	New London	2	E	Minor	Warmwater	Α	Dry Crossing
LOOP EXTENSION										
Line 36-A Loop Extensi	on									
B13-CLR-S1	Coles Brook	0.05	Cromwell	Middlesex	4	Р	Minor	Warmwater	Α	Dry Crossing
B13-CLR-S2	UNT to Dividend Brook	0.79	Cromwell	Middlesex	1	I	Minor	Coldwater	Α	Dry Crossing
B13-CLR-S2C	UNT to Dividend Brook	0.88	Cromwell	Middlesex	1	I	Minor	Coldwater	Α	Dry Crossing
B13-CLR-S2A	Dividend Brook	0.89	Cromwell	Middlesex	20	Р	Minor	Coldwater (Trout)	Α	Dry Crossing
B13-CLR-S2B	UNT to Dividend Brook	0.90	Cromwell	Middlesex	2	I	Minor	Coldwater	Α	Dry Crossing
B13-CLR-S2D	UNT to Dividend Brook	0.90	Cromwell	Middlesex	1.5	I	Minor	Coldwater	Α	Dry Crossing
B13-CLR-S2E	UNT to Dividend Brook	0.91	Cromwell	Middlesex	2	Р	Minor	Coldwater	Α	Dry Crossing

TABLE I-1 (cont'd)										
	Waterbodies Crossed by the AIM Project									
Facility, Waterbody ID	Waterbody Name	Milepost <sup>a</sup>	Municipality	County	Crossing Width (Feet) <sup>b</sup>	Flow Type	FERC Classification °	Fishery Type	State Water Quality Classification <sup>d</sup>	Proposed Crossing Method <sup>e</sup>
B13-CLR-S4	Dividend Brook	1.31	Cromwell	Middlesex	10	Р	Minor	Coldwater (Trout)	Α	Dry Crossing
B13-CLR-S4	Dividend Brook	1.32	Cromwell	Middlesex	21	Р	Intermediate	Coldwater (Trout)	Α	Dry Crossing
B13-CLR-S4	Dividend Brook	1.33	Cromwell	Middlesex	15	Р	Intermediate	Coldwater (Trout)	Α	Dry Crossing
B13-CLR-S4	Dividend Brook	1.34	Cromwell	Middlesex	10	Р	Minor	Coldwater (Trout)	Α	Dry Crossing
E-1 System Lateral Loc	p Extension									
B13-ELP-S3	UNT to Stony Brook	0.04	Montville	New London	13	Р	Minor	Coldwater (Trout)	Α	Dry Crossing
B13-ELP-S2	UNT to Stony Brook	0.16	Montville	New London	1.5	1	Minor	Coldwater (Trout)	Α	Dry Crossing
B13-ELP-S4	UNT to Stony Brook	0.32	Montville	New London	10	I	Minor	Coldwater (Trout)	Α	Dry Crossing
B13-ELP-S4A	UNT to Stony Brook	0.34	Montville	New London	1	1	Minor	Coldwater (Trout)	Α	Dry Crossing
B13-ELP-S5	Falls Brook	0.80	Montville	New London	25	Р	Intermediate	Coldwater (Trout)	Α	Dry Crossing
B13-ELP-S6	UNT to Stony Brook	0.94	Montville	New London	5	1	Minor	Coldwater (Trout)	Α	Dry Crossing
B13-ELP-S7	UNT to Stony Brook	1.18	Montville	New London	1	1	Minor	Coldwater (Trout)	Α	Dry Crossing
NEW PIPELINE										
West Roxbury Lateral										
B13-WRL-S5	UNT to Purgatory Brook	0.07	Dedham	Norfolk	9	Р	Minor	Warmwater	В	Dry Crossing
B13-WRL-S3	Mother Brook	3.11	Dedham	Norfolk	41	Р	Intermediate	Warmwater	В	Dry Crossing
ABOVEGROUND FACILIT	TES									
None										

<sup>&</sup>lt;sup>a</sup> Milepost is the approximate pipeline entry point of each waterbody.

b Crossing width measured from water's edge.

Minor Waterbody – Includes all waterbodies less than or equal to 10 feet wide at the water's edge at the time of crossing.

Intermediate Waterbody – Includes all waterbodies greater than 10 feet wide by less than or equal to 100 feet wide at the water's edge at the time of crossing.

Major Waterbody – Includes all waterbodies greater than 100 feet wide at the water's edge at the time of crossing.

TABLE I-1 (cont'd)										
	Waterbodies Crossed by the AIM Project									
Facility, Waterbody ID	Waterbody Name	Milepost <sup>a</sup>	Municipality	County	Crossing Width (Feet) <sup>b</sup>	Flow Type	FERC Classification <sup>c</sup>	Fishery Type	State Water Quality Classification <sup>d</sup>	Proposed Crossing Method <sup>e</sup>

d State Designations and Use Descriptions:

#### New York:

- 1. The classifications A. AA. A-S and AA-S indicate a best usage for a source of drinking water, swimming and other recreation, and fishing.
- 2. Classification B indicates a best usage for swimming and other recreation, and fishing.
- 3. Classification C indicates a best usage for fishing.
- 4. Classification D indicates a best usage of fishing, but these waters will not support fish propagation.
- 5. Classification SA (marine waters) indicates a best usage for shellfishing for market purposes, swimming and other recreation, and fishing.
- 6. Classification SB (marine waters) indicates a best usage for swimming and other recreation, and fishing.
- 7. Classification SC (marine waters) indicates a best usage for fishing.
- 8. Classification I (marine waters) indicates a best usage for secondary contact recreation, and fishing.
- 9. Classification SD (marine waters) indicates a best usage for fishing, but these waters may not support fish propagation.
- 10. The symbol (T or TS) after any classification means that designated waters are trout waters (T) or suitable for trout spawning (TS). See the DEC Rules & Regulations (parts 800-941) for a complete definition.

#### Connecticut:

**AA** – These waters can be used as existing or proposed drinking water sources, habitat for fish and other aquatic life or wildlife, recreation, and industrial or agricultural water supply.

A – These waters are appropriate for fish, aguatic life and wildlife habitat, potential drinking water supply, recreation, navigation, and industrial or agricultural water supply.

B - These waters are appropriate for fish, aquatic life and wildlife habitat, recreation, navigation, and industrial or agricultural water supply.

#### Massachusetts:

A – These waters are designated as a source of public water supply. To the extent compatible with this use they shall be an excellent habitat for fish, other aquatic life and wildlife, and suitable for primary and secondary contact recreation. These waters shall have excellent aesthetic value. These waters are designated for protection as Outstanding Resource Waters under 314 CMR 4.04(3).

**B** – These waters are designated as a habitat for fish. Other aquatic life, and wildlife, and for primary and secondary contact recreation. Where designated they shall be suitable as a source of public water supply with appropriate treatment. They shall be suitable for irrigation and other agricultural uses and for compatible industrial cooling and process uses. These waters shall have consistently good aesthetic value.

C – These waters are designated as a habitat for fish. Other aquatic life, and for secondary contact recreation. These waters shall be suitable for the irrigation of crops used for consumption after cooking and for compatible industrial cooling and process uses. These waters shall have good aesthetic value.

**SB** – These waters are designated as habitat for fish, other aquatic life and wildlife, and for primary and secondary contact recreation. In approved areas they shall be suitable for shellfish harvesting with depuration (Restricted Shellfish Areas). These waters shall have consistently good aesthetic value.

The proposed pipeline crossing methods of "dry" and "HDD" are described in detail in section 2.3.1.2.

Indicates partial estimated delineation via aerial imagery within construction workspace.

### **APPENDIX J**

BEST DRILLING PRACTICES, MONITORING, AND CLEAN-UP OF HORIZONTAL DIRECTIONAL DRILLING INADVERTENT RETURNS PLAN AND SITE-SPECIFIC HORIZONTAL DIRECTIONAL DRILL CROSSING PLANS

Best Drilling Practices, Monitoring and Clean-up of Horizontal Directional Drilling Inadvertent Returns for the Algonquin Incremental Market Project



February 2014



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# 1.0 INTRODUCTION

Algonquin Gas Transmission, LLC ("Algonquin"), an indirect, wholly-owned subsidiary of Spectra Energy Partners, is seeking authorization from the Federal Energy Regulatory Commission ("FERC" or "Commission") pursuant to Section 7(c) of the Natural Gas Act<sup>1</sup> ("NGA") to construct, install, own, operate, and maintain the Algonquin Incremental Market Project ("AIM Project" or "Project") which will involve expansion of its existing pipeline systems located in New York, Connecticut, Rhode Island and Massachusetts.

Algonquin has developed this Best Drilling Practices Plan ("BDP Plan") for monitoring the Horizontal Directional Drilling ("HDD") program. This BDP Plan will be kept on-site at all drill locations and will be available and implemented by all proposed personnel described in the following sections of this BDP Plan. All HDD activities will be managed in accordance with this BDP Plan.

# 2.0 BEST AVAILABLE DRILLING PRACTICES

## 2.1 Description of the Work

Algonquin will use the HDD method at designated locations to construct the Project. Two HDDs are proposed. They include:

- ◆ <u>42-inch Hudson River HDD</u> Beginning at approximately MP 3.19 in Stony Point, New York, on the west side of the Hudson River and terminating at approximately MP 3.91 in the Hamlet of Verplank in the Town of Cortlandt, New York on the east side of the Hudson River
- ◆ <u>42-inch I-84/Still River HDD</u> Beginning at approximately MP 1.4 in Danbury, Connecticut in the paved portion of the Connecticut Department of Transportation I-84 Rest Area and terminating at approximately MP 2.1 on the east side of Mill Plain Road (U.S. 202/U.S. 6) in the Town of Danbury, Connecticut.

The HDD method always involves establishing staging areas along both sides of the proposed crossing typically at the entry and exit points. The process commences with the boring of a pilot hole into the ground beneath the obstruction, wetland or water body, and then enlarging the hole with one or more passes of a reamer until the hole is the necessary diameter to facilitate the pull-back (installation) of the pipeline.

Once the reaming passes are completed, prefabricated pipe segments are then pulled through the hole to complete the crossing; additional welding between segments will be required. While the HDD method is a proven technology, there are certain impacts that could occur as a result of the drilling such as the inadvertent release of drilling fluid, which is a slurry of bentonite clay and water which is classified as non-toxic to the aquatic environment and is a non-hazardous substance. Drilling fluids that are released typically contain a lower concentration of bentonite when they surface because the bentonite is filtered out as its passes through existing sediments of varying types. The proposed drilling program for both HDDs is expected to be initiated and completed in 2015.

The following sections provide the process of HDD and procedures to be implemented in the case of HDD failure or the inadvertent release of drilling fluid.

-

<sup>&</sup>lt;sup>1</sup> 15 U.S.C. §§ 717f(b) and 717f(c) (2006).



# 2.2 Background

The HDD process uses bentonite-based drilling fluids. The drilling fluids are tested for specific engineering properties to ensure a successful HDD installation. The environmental impact associated with HDD is the inadvertent release of drilling fluids to the surface along the drill alignment during drilling operations.

The drilling fluids are typically a mixture of fresh water and bentonite (sodium montmorillonite). Bentonite is natural clay usually mined in Wyoming. Bentonite is extremely hydrophilic and can absorb up to ten times its weight in water. Typically, the drilling fluid contains no more than 5 percent bentonite (95 percent fresh water).

The HDD Contractor maintains fluid performance through sampling, testing and recording of the fluid properties during drilling operations; analyzing and then adjusting and maintaining to afford the most efficient drilling fluid rheology to adapt to various geological conditions.

The slurry is designed to:

- Stabilize the bore hole against collapse; stabilizes formations and prevents fluid loss;
- ♦ Lubricate, cool, and clean the tooling cutters; cool guidance electronics;
- Transport cuttings by suspension to enable flow to the surface at entry/exit points for recycling;
- Produce lubrication for drill string and downhole assembly while drilling which reduces friction forces from the formation and pull loads;
- ◆ Produce hydrostatic fluid pressure in the bore hole to offset ground formation/ground water pressure; and
- Drive downhole drill motor for rock drilling.

### 2.2.1 HDD Working Procedures

Prior to drilling operations, site-specific HDD Procedures will be prepared by the HDD contractor and submitted to Algonquin for review and approval. As a minimum, the HDD Procedures will address the following:

<u>Annular Pressure or Release Mitigation</u> – Once it is indicated to the driller that annular pressures are abnormally high or fluid loss is apparent and that a release has occurred, the driller has the following options (or any combination of these options):

- Dispatch experienced company personnel observers to monitor the area in the vicinity of the drilled path;
- ♦ Decrease pump pressure;
- Decrease penetration rate;
- Temporarily cease drilling operations and shut down mud pump;
- Re-start pump and stroke bore hole in 30 ft. +/- lengths to restore circulation ("swab" the hole) as many as 6 times but no fewer than 2 times;
- ♦ Introduce additional flow along the borehole starting at the entry/exit using "weeper" subs; and
- Modify the drilling mud with a change in viscosity and/or lost circulation additives.

If inadvertent returns are observed surfacing on the ground surface at a location that is inaccessible; the following procedures will be followed:



- ♦ Contractor will ensure all reasonable measures within the limitations of current technology have been taken to re-establish circulation; and
- Continue drilling utilizing a minimal amount of drilling fluid as required to penetrate the formation or to maintain a successful product pull back.

# 3.0 MONITORING OF INADVERTENT RETURNS

## 3.1 Personnel and Responsibilities

The actions in this BDP Plan are to be implemented by the following personnel:

<u>Chief Inspector</u> – Algonquin will designate an HDD Chief Inspector for the Project. The CI will have overall authority for construction activities that occur on the Project.

<u>Environmental Inspector</u> – At least one Environmental Inspector ("EI") will be designated by Algonquin to monitor the HDD activities. The EI will have peer status with all other activity inspectors and will report directly to the HDD CI who has overall authority. The EI will have the authority to stop activities that violate the environmental conditions of the FERC certificate (if applicable), other federal and state permits, or landowner requirements, and to order corrective action.

<u>HDD Superintendent</u> – is the senior on-site representative of the HDD contractor. The HDD Superintendent has overall responsibility for implementing this BDP Plan on behalf of the HDD Contractor - The HDD Superintendent will be familiar with all aspects of the drilling activities, the contents of the BDP Plan and the conditions of approval under which the activity is permitted to take place. The HDD Superintendent will make available a copy of this BDP Plan on all drill sites and distribute to the appropriate construction personnel. The HDD Superintendent will ensure that workers are properly trained and familiar with the necessary procedures for response to an inadvertent release.

<u>HDD Operator</u> – is HDD contractor's driller operating the drilling rig and mud pumps. The HDD Operator is responsible for monitoring circulation back to the entry and exit locations and for monitoring annular pressures during pilot-hole drilling. In the event of loss of circulation or higher than expected annular pressures, the HDD Operator must communicate the event to the HDD Superintendent and HDD contractor field crews as well as the on-site Algonquin inspection staff. The HDD Operator is responsible for stoppage or changes to the drilling program in the event of observed or anticipated inadvertent returns.

<u>HDD Contractor Personnel</u> – during HDD installation, field crews will be responsible to monitor the HDD alignment along with the Applicant's field representatives'. Field crews in coordination with the EI are responsible for timely notifications and responses to observed releases in accordance with this BDP Plan. The EI ultimately must sign off on the action plan for mitigating the release.

## 3.2 Training

Prior to drilling, the HDD Superintendent, CI and the Applicant's EI will verify that the HDD Operator and field crew receive the following site-specific training but not limited to:

- ◆ Project specific safety training;
- Review provisions of this BDP Plan and site-specific permit requirements;
- Review location of sensitive environmental resources at the site;
- Review drilling procedures for release prevention;
- Review the site-specific monitoring requirements;



- Review the location and operation of release control equipment and materials; and
- Review protocols for reporting observed inadvertent returns.

# 3.3 Monitoring & Reporting

Appropriate Monitoring & Reporting actions will be:

- ♦ If the HDD Operator observes an increase in annular fluid pressure or loss of circulation, the Operator will notify the HDD Superintendent and field crews of the event and approximate position of the tooling;
- ♦ Where practical, a member of the field crew will visually inspect the ground surface near the position of the cutting head;
- ♦ If an inadvertent release is observed:
  - o Field crew will notify (via hand-held radio or cell phone) the HDD Operator;
  - The HDD Operator will temporarily cease pumping of the drilling fluid and notify the HDD Superintendent and CI;
  - o The CI will notify and coordinate a response with the EI;
  - The EI will notify appropriate permit authorities as necessary of the event and proposed response and provide required documentation within 24 hours; and
- The CI will prepare a report that summarizes the incident.

# 4.0 RESPONSE TO INADVERTENT RETURNS

Typically, inadvertent releases are most often detected in an area near the entry or exit points of the drill alignment when the pilot bore is at shallow depths, above bedrock, and in permeable/porous soils. In these occurrences the release will be assessed by the HDD Superintendent, EI and CI to determine an estimated volume and foot-print of the release. They will also assess the potential of the release to reach adjacent waterbodies, wetlands, or other types of infrastructure.

The HDD Superintendent will assess the drilling parameters (depth, annular pressures, fluid flow rate and drill fluid characteristics) and incorporate appropriate changes.

The HDD Superintendent, EI, and CI will implement installation of appropriate containment structures and additional response measures. Access for personnel and equipment to the release site is a major factor in determining the methods used for containment and disposal. Typically, containment is achieved by excavating a small sump pit (5 cubic yards) at the site of the release and to surround the release with hay bales, silt fence and/or sand bags. Once contained, the drilling fluid is either collected by vacuum trucks or pumped back to the mud recycle unit, or to a location where vacuum trucks can be accessed. The fluids are then transported either back to the HDD Drilling Rig or to a disposal site.

If the release is mitigated and controlled, forward progress of the drilling will be approved by the EI in coordination with the HDD Superintendent and CI.

The site-specific response will follow these guidelines:

## 4.1 Upland Location

• Evaluate the amount of release to determine if containment structures are warranted and if they will effectively contain the release.



- Promptly implement appropriate containment measures as needed to contain and recover the slurry.
- ♦ If the release is within 50-foot of a wetland or waterbody, silt fence and/or hay bales will be installed between the release site and the wetland or waterbody.
- ♦ If the release cannot be contained, then the operator must suspend drilling operations until appropriate containment is in place.
- ♦ Remove the fluids using either a vacuum truck or by pumping to a location where a vacuum truck is accessible.
- ♦ After the HDD installation is complete, perform final clean-up (see Section 5).

### 4.2 Wetland Location

Algonquin's proposed HDD's are being designed to minimize the potential for inadvertent releases to the HDD crossing locations. Although final design is still in progress, Algonquin expects that the I-84/Still River HDD will be a rock drill thereby limiting the potential for inadvertent returns to occur. To further minimize the potential for inadvertent returns, casing will be installed through overburden soils to the bedrock interface (as feasible) at both ends of the HDD. Even with these controls in place, if a release of drilling fluids does occur the following steps will be taken:

- Evaluate the amount of release to determine if containment structures are warranted and if they will effectively contain the release.
- Promptly implement appropriate containment measures to contain and recover the slurry;
  - o Efforts to contain and recover slurry in wetlands may result in further disturbance by equipment and personnel, and possibly offset the benefit gained in removing the slurry.
  - o If the amount of the slurry is too small to allow the practical collection from the affected area, the fluid will be diluted with fresh water or allowed to dry and dissipate naturally.
- If the release cannot be controlled or contained, immediately suspend drilling operations until appropriate containment is in place.
- Remove the fluids using either a vacuum truck or by pumping to a location where a vacuum truck is accessible.
- ♦ After the HDD installation is complete, perform final clean-up (see Section 5).

## 4.3 Hudson River Crossing

Due to geotechnical limitations and the extreme depth of the bedrock profile, the Hudson River HDD has been designed to be a soft soil HDD. This crossing method is consistent with the successful HDD crossing of the Hudson River that was completed by Spectra Energy in 2013 as part of the NJ-NY Expansion Project. Because the crossing of the Hudson River will occur in soft soils, casing will be driven deep into the substrata at both ends of the HDD and will remain in place for the duration of the crossing. This will allow flow of drilling fluids from the drill path below the river bed back to the surface. Because this crossing is categorized as a "soft" crossing by passing through organics, silt and sands, the drilling process will occur quite quickly as opposed to a hard rock crossing. While it is possible for some drilling fluid to inadvertently release to the river bed, the volume would be minimal and would not accumulate due to the rapid drilling rates. Additionally, Algonquin's contractor will drill the pilot holes from both sides of this crossing and perform an intersect, thereby decreasing the distance, and subsequently decreasing the resistance/pressure required for the drilling fluid to travel back to the entry points via the conductor casing.

Because of the design, the river current, marine traffic, existing turbidity and other pollutants that contribute to the discoloration of the major water body locations it is extremely unlikely any inadvertent



returns could be identifiable and any amount of accumulation will not occur other than that described above. Algonquin will remove the drilling fluid as described above in the near shore areas of the Hudson River if required. Algonquin does not believe it is feasible to identify, safe or technically possible to effectively perform any reclamation of inadvertent returns that in all probability will never accumulate in the navigation channels of the major waterbody crossings.

# 5.0 CLEAN-UP

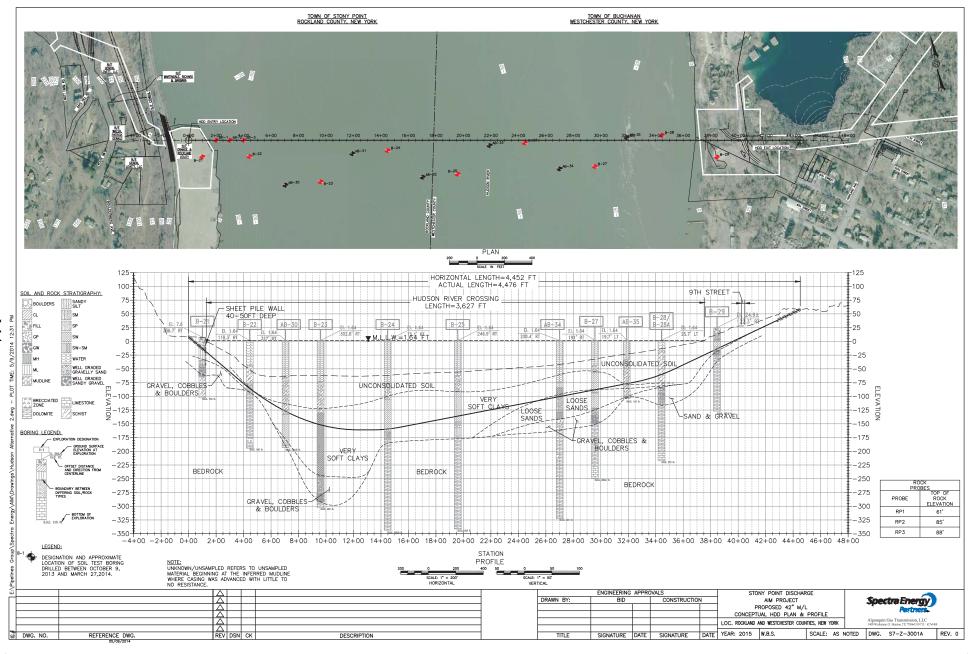
After completion of the HDD installation, site-specific clean-up measures will be developed by the CI, HDD Superintendent, for approval by the EI. Potential for secondary impact from the clean-up process is to be evaluated and benefits of clean-up activities.

The following measures are considered appropriate:

- Drilling mud will be cleaned up by hand using hand shovels, buckets and soft bristled brooms minimizing damage to existing vegetation;
- Fresh water washes may be employed if deemed beneficial and feasible;
- ♦ Containment structures will be pumped out and the ground surface scraped to bare topsoil minimizing loss of topsoil or damage to adjacent vegetation;
- ♦ The recovered drilling fluid will be recycled or disposed of at an approved upland location or disposal facility. No recovered drilling fluid will be disposed of in streams or storm drains
- ♦ All containment structures will be removed; and
- Recovered materials will be collected in containers for temporary storage prior to removal from the site.

**Site-Specific Horizontal Directional Drill Crossing Plans** 

CITY OF DANBURY
FAIRFIELD COUNTY, CONNECTICUT



# APPENDIX K WETLAND CROSSINGS

					TABLE I	<b>&lt;-1</b>						
				Wet	lands Crossed by	the AIM Projec	et					
									Vetland mpacted <sup>e</sup>	<b>.</b>	Total Wetland	Total Forested
Facility, State, Wetland ID	NWI Classification <sup>a</sup>	Hydro <sup>b</sup>	Enter Milepost °	Exit Milepost °	Town	County	Crossing Length (feet) d	Within Existing ROW	Outside of Existing ROW	Total Forested Wetland Acreage Impacted <sup>e</sup>	Acreage Impacted by Mainten- ance f	Wetland Acreage Impacted by Mainten- ance f
PIPELINE FACILITIES	•			l .	1	•	JI.	l.	JI.		l .	,
New York												
Haverstraw to Stony Po	int Take-up and Re	elay										
B13-RLR-W1	PEM/PFO	SAT	0.24	0.24	Haverstraw	Rockland	9.77	0.15	0.00	0.01	0.00	0.00
B13-RLR-W2	PEM/PFO	SAT	0.54	0.56	Haverstraw	Rockland	102.08					
B13-RLR-W2	PEM/PFO	SAT	0.57	0.58	Haverstraw	Rockland	57.38	0.78	0.05	0.07	0.00	0.00
B13-RLR-W2	PEM/PFO	SAT	0.58	0.63	Haverstraw	Rockland	226.03	0.76	0.05	0.07	0.00	0.00
B13-RLR-W2	PEM/PFO	SAT	0.66	0.68	Haverstraw	Rockland	68.51					
B13-RLR-W3 g/	PEM/PFO	PF	0.77	1.01	Haverstraw	Rockland	1,299.46	1.97	0.81	0.50	0.00	0.00
B13-RLR-W3 <u>g</u> /	PEM/PFO	PF	1.04	1.08	Haverstraw	Rockland	212.67	1.97	0.61	0.50	0.00	0.00
B13-RLR-W4	PEM/PSS	SAT	1.62	1.65	Stony Point	Rockland	184.56	0.22	0.06	0.05	0.00	0.00
B13-RLR-W5	PEM/PFO	SAT	2.13	2.14	Stony Point	Rockland	77.73	0.24	0.03	0.06	0.00	0.00
B13-RLR-W6	PSS/PEM/ PFO	SAT	2.14	2.16	Stony Point	Rockland	87.10	0.08	0.22	0.21	0.00	0.00
B13-RLR-W6	PSS/PEM/ PFO	SAT	2.24	2.25	Stony Point	Rockland	20.67	0.08	0.22	0.21	0.00	0.00
B13-RLR-W7	PSS	SAT	2.42	2.44	Stony Point	Rockland	0	0.02	0.00	0.00	0.00	0.00
B13-RLR-W8	PSS/PEM	SAT	2.66	2.75	Stony Point	Rockland	0	0.39	0.00	0.00	0.00	0.00
B13-RLR-W9	PSS/PEM	SF/ SAT	2.96	2.96	Stony Point	Rockland	27.63	0.03	0.05	0.05	0.00	0.00
B13-RLR-W10	PEM/PFO	SAT	3.03	3.05	Stony Point	Rockland	0	0.01	0.01	0.01	0.00	0.00
Stony Point to Yorktown	Take-up and Rela	y										
B13-SPLR-W40	PFO/PEM	SF/ SAT	1.27	1.28	Stony Point	Rockland	43.97	0.04	0.01	0.00	0.00	0.00
B13-SPLR-W37 <sup>h</sup>	PFO	SF	1.90	1.91	Stony Point	Rockland	0	0.00	0.00	0.00	0.00	0.00
B13-SPLR-W208	PEM1E	SAT	3.05	3.06	Stony Point	Rockland	0	0.00	0.02	0.00	0.00	0.00

# TABLE K-1 (cont'd)

# Wetlands Crossed by the AIM Project

				wei	iands Crossed by	y the Alivi Projec	il					
									Vetland		Total	_ Total
									mpacted e Outside	Total Forested	Wetland Acreage Impacted	Forested Wetland Acreage
	NWI		Enter	Exit			Crossing Length	Within Existing	of Existing	Wetland Acreage	by Mainten-	Impacted by Mainten-
Facility, State, Wetland ID	Classification <sup>a</sup>	Hydro <sup>b</sup>	Milepost <sup>c</sup>	Milepost c	Town	County	(feet) d	ROW	ROW	Impacted e	ance	ance f
B13-SPLR-W208A	PEM1E	SAT	3.06	3.08	Stony Point	Rockland	0	0.00	0.08	0.00	0.00	0.00
B13-SPLR-W50	PFO/PSS/ PEM	SAT	4.44	4.45	Cortlandt	Westchester	0	0.00	0.17	0.17	0.05	0.05
B13-SPLR-W203	PEM	SAT	4.56	4.56	Cortlandt	Westchester	0	0.00	0.02	0.02	0.00	0.00
B13-SPLR-W205	PFO	DRY	4.74	4.74	Cortlandt	Westchester	0	0.00	0.04	0.04	0.01	0.01
B13-SPLR-W202	PFO	SAT	4.82	4.82	Cortlandt	Westchester	17.19	0.00	0.07	0.07	0.03	0.03
B13-SPLR-W16	PFO	SAT	5.06	5.06	Cortlandt	Westchester	44.34					
B13-SPLR-W16	PFO/PEM	SAT	5.16	5.17	Cortlandt	Westchester	36.20	0.00	4.50	4.07	0.04	0.75
B13-SPLR-W16	PFO/PEM	SAT	5.18	5.20	Cortlandt	Westchester	100.75	0.00	1.59	1.27	0.94	0.75
B13-SPLR-W16	PFO/PEM	SAT	5.25	5.37	Cortlandt	Westchester	640.64					
B13-SPLR-W17	PFO/PEM	SAT	5.62	5.64	Cortlandt	Westchester	98.08					
B13-SPLR-W17	PFO/PEM	SAT	5.64	5.64	Cortlandt	Westchester	0.01	0.17	0.13	0.13	0.00	0.00
B13-SPLR-W17	PFO/PEM	SAT	5.65	5.66	Cortlandt	Westchester	67.98					
B13-SPLR-W2	PEM/PFO1	SAT	5.90	5.99	Peekskill/ Cortlandt	Westchester	484.03	0.75	0.76	0.80	0.00	0.00
B13-SPLR-W3	PFO/PEM	SF	6.03	6.05	Cortlandt	Westchester	74.26	0.26	0.04	0.04	0.00	0.00
B13-SPLR-W3	PFO/PEM	SF	6.07	6.09	Cortlandt	Westchester	95.58	0.26	0.04	0.04	0.00	0.00
B13-SPLR-W5	PFO	SF/ SAT	6.28	6.28	Cortlandt	Westchester	0	0.00	0.05	0.05	0.00	0.00
B13-SPLR-W7	PFO/PEM	SF	6.53	6.54	Cortlandt	Westchester	85.37					
B13-SPLR-W7	PFO/PEM	SF	6.56	6.57	Cortlandt	Westchester	68.63	0.40	0.45	0.13	0.00	0.00
B13-SPLR-W7	PFO/PEM	SF	6.65	6.69	Cortlandt	Westchester	199.46					
B13-SPLR-W8	PFO/PEM	SAT	6.83	6.84	Cortlandt	Westchester	58.35	0.01	0.11	0.01	0.00	0.00
B13-SPLR-W10	PFO/PEM	SAT	7.02	7.04	Cortlandt	Westchester	77.37					
B13-SPLR-W10	PFO/PEM	SAT	7.04	7.04	Cortlandt	Westchester	5.25	0.02	0.06	0.05	0.00	0.00
B13-SPLR-W10	PFO/PEM	SAT	7.04	7.05	Cortlandt	Westchester	65.38	]				
B13-SPLR-W11	PEM/PFO	SAT	7.09	7.09	Cortlandt	Westchester	0	0.00	0.05	0.00	0.00	0.00
B13-SPLR-W12	PFO/PEM	SF	7.34	7.36	Cortlandt	Westchester	103.39	0.12	1 21	0.27	0.00	0.00
B13-SPLR-W12	PFO/PEM	SF	7.37	7.51	Cortlandt	Westchester	769.95	0.12	1.21	0.27	0.00	0.00

### TABLE K-1 (cont'd) Wetlands Crossed by the AIM Project **Total Wetland** Total Total Acreage Impacted e Wetland Forested Acreage Wetland Total Outside Forested Impacted Acreage Within Crossina of Wetland Impacted NWI Exit Length Existing Existing Maintenby Mainten-Enter Acreage Classification a Hydro b (feet) d ROW ROW Impacted e ance f Facility, State, Wetland ID Milepost c Milepost c ance f Town County PFO/PEM/ B13-SPLR-W13 SF 7.56 7.62 Cortlandt Westchester 303.99 PSS PFO/PEM/ SF B13-SPLR-W13 7.64 7.85 Cortlandt Westchester 1,077.77 **PSS** 0.00 0.00 0.21 2.09 0.78 PFO/PEM/ B13-SPLR-W13 SF 7.85 7.86 Cortlandt Westchester 34.62 **PSS** PFO/PEM/ B13-SPLR-W13 SF 7.90 7.92 Cortlandt Westchester 112.44 **PSS** APPENDIX K (cont'd) PEM/PFO SF B13-SPLR-W14 8.24 8.24 Cortlandt Westchester 3.99 0.03 0.23 0.02 0.00 0.00 B13-SPLR-W14 PEM/PFO SF 8.26 8.29 Cortlandt Westchester 188.37 SF/ PFO/PEM B13-SPLR-W15 8.37 8.38 Cortlandt Westchester 36.43 SAT 0.00 0.02 0.25 0.11 0.00 SF/ B13-SPLR-W15 PFO/PEM 8.45 Cortlandt 8.42 Westchester 129.86 SAT A13-SPLR-W2 PFO/PEM SAT 8.46 8.58 Cortlandt 620.05 Westchester A13-SPLR-W2 PFO/PEM SAT 8.59 8.71 Cortlandt Westchester 629.96 1.62 0.71 0.56 0.00 0.00 A13-SPLR-W2 PFO/PEM SAT Cortlandt 8.75 8.77 Westchester 86.83 B13-SPLR-W18 PFO/PEM SAT 8.89 401.72 0.09 0.00 0.00 8.81 Cortlandt Westchester 0.43 0.09 SF/ A13-SPLR-W4 PFO/PEM 9.24 Cortlandt Westchester 0.15 0.00 9.36 626.97 1.00 0.00 0.00 SAT B13-SPLR-W43 PFO/PEM SAT 9.57 9.63 Cortlandt Westchester 286.57 0.46 0.00 0.08 0.00 0.00 B13-SPLR-W206 PFO/PEM SAT 9.64 9.68 Cortlandt 234.95 0.24 0.08 0.00 0.00 0.00 Westchester B13-SPLR-W20h PEM SAT 9.94 239.73 9.98 Cortlandt Westchester 0.48 0.00 0.13 0.00 0.00 B13-SPLR-W20h PEM SAT 9.99 9.99 Cortlandt Westchester 32.29 SF/ B13-SPLR-W21 PEM/PSS 10.33 10.37 Cortlandt Westchester 165.52 0.29 0.05 0.04 0.00 0.00 SAT B13-SPLR-W22 PEM/PFO SAT 10.51 10.52 Cortlandt Westchester 41.53 0.46 0.04 0.15 0.00 0.00 B13-SPLR-W22 PEM/PFO SAT 10.54 Cortlandt 10.59 Westchester 248.94 B13-SPLR-W23 PEM SAT 10.63 10.68 Cortlandt Westchester 298.18 0.31 0.24 0.25 0.00 0.00 B13-SPLR-W24 PEM SAT 10.72 10.74 Cortlandt Westchester 101.86 0.09 0.00 0.00 0.00 0.00

					TABLE K-1	(cont'd)						
				Wet	lands Crossed by	the AIM Projec	:t					
									Vetland mpacted <sup>e</sup>	Total	Total Wetland Acreage	Total Forested Wetland
Facility, State, Wetland ID	NWI Classification <sup>a</sup>	Hydro <sup>b</sup>	Enter Milepost °	Exit Milepost <sup>c</sup>	Town	County	Crossing Length (feet) <sup>d</sup>	Within Existing ROW	Outside of Existing ROW	Forested Wetland Acreage Impacted e	Impacted by Mainten- ance f	Acreage Impacted by Mainten- ance f
B13-SPLR-W25	PFO/PSS/ PEM	SAT	10.78	10.82	Cortlandt	Westchester	198.79	0.20	0.07	0.13	0.00	0.00
B13-SPLR-W25	PFO/PSS/ PEM	SAT	10.83	10.84	Cortlandt	Westchester	62.62	0.39	0.07	0.13	0.00	0.00
B13-SPLR-W41	PEM/PFO	SAT	10.98	11.03	Cortlandt	Westchester	228.22	0.28	0.02	0.01	0.00	0.00
B13-SPLR-W26	PFO/PEM	PF	11.07	11.13	Yorktown	Westchester	295.10	0.57	0.11	0.14	0.00	0.00
B13-SPLR-W26	PFO/PEM	PF	11.13	11.16	Yorktown	Westchester	141.20	0.57	0.11	0.14	0.00	0.00
B13-SPLR-W27	PFO/PEM	SAT	11.51	11.54	Yorktown	Westchester	203.76	0.24	0.20	0.26	0.00	0.00
B13-SPLR-W28	PEM/PFO	SAT	11.70	11.73	Yorktown	Westchester	151.85					
B13-SPLR-W28	PEM/PFO	SAT	11.75	11.75	Yorktown	Westchester	20.91	0.53	0.00	0.06	0.00	0.00
B13-SPLR-W28	PEM/PFO	SAT	11.75	11.81	Yorktown	Westchester	301.63					
B13-SPLR-W29	PFO/PEM	SAT	11.97	11.98	Yorktown	Westchester	46.85	0.05	0.04	0.03	0.00	0.00
B13-SPLR-W30	PSS/PEM	SAT	12.20	12.24	Yorktown	Westchester	186.32	0.24	0.08	0.09	0.00	0.00
Connecticut												
Southeast to MLV-19 Ta	ake-up and Relay											
B13-SELR-W8	PFO1/PEM1	SAT	0.17	0.21	Danbury	Fairfield	235.43	0.74	0.23	0.12	0.00	0.00
B13-SELR-W8	PFO1/PEM1	SAT	0.24	0.30	Danbury	Fairfield	344.21	0.74	0.23	0.12	0.00	0.00
B13-SELR-W9	PEM/PFO	SF/ SAT	0.66	0.71	Danbury	Fairfield	274.58	1.08	0.51	0.63	0.00	0.00
B13-SELR-W9	PEM/PFO	SF/ SAT	0.74	0.85	Danbury	Fairfield	573.81	1.06	0.51	0.63	0.00	0.00
A13-SELR-W1	PEM/PFO	SAT	1.03	1.04	Danbury	Fairfield	77.86	0.15	0.03	0.04	0.00	0.00
A13-SELR-W2	PEM/PFO	SAT	1.15	1.17	Danbury	Fairfield	111.96	0.00	0.00	0.00	0.00	0.00
A13-SELR-W2	PEM/PFO	SAT	1.18	1.22	Danbury	Fairfield	193.15	0.38	0.03	0.02	0.00	0.00
A13-SELR-W3	PEM/PSS/ PFO	SAT	1.24	1.27	Danbury	Fairfield	156.97	0.18	0.14	0.15	0.00	0.00
B13-SELR-W12	PEM/PSS	SF	1.72	1.85	Danbury	Fairfield	684.06	HDD	HDD	HDD	HDD	HDD
B13-SELR-W10	PEM/PFO	SF/ SAT	2.06	2.11	Danbury	Fairfield	277.87	0.57	0.2	0.25	0.00	0.00
B13-SELR-W10	PEM/PFO	SF/ SAT	2.13	2.14	Danbury	Fairfield	42.81	0.57	0.2	0.20	0.00	0.00

TABLE K-1 (cont'd)												
				Wet	lands Crossed by	the AIM Projec	ct					
									Vetland mpacted <sup>e</sup>	Tatal	Total Wetland	Total Forested Wetland
Facility, State, Wetland ID	NWI Classification <sup>a</sup>	Hydro <sup>b</sup>	Enter Milepost <sup>c</sup>	Exit Milepost °	Town	County	Crossing Length (feet) <sup>d</sup>	Within Existing ROW	Outside of Existing ROW	Total Forested Wetland Acreage Impacted <sup>e</sup>	Acreage Impacted by Mainten- ance <sup>f</sup>	Acreage Impacted by Mainten- ance f
A13-SELR-W4	PEM/PFO	SAT	2.64	2.68	Danbury	Fairfield	197.07	0.53	0.24	0.25	0.00	0.00
A13-SELR-W4	PEM/PFO	SAT	2.69	2.72	Danbury	Fairfield	145.82	0.55	0.24	0.25	0.00	0.00
A13-SELR-W5	PEM/PFO	SF/ SAT	2.76	2.86	Danbury	Fairfield	499.85	0.30	0.00	0.03	0.00	0.00
A13-SELR-W6	PEM/PFO	SAT	3.00	3.13	Danbury	Fairfield	642.26	0.79	0.27	0.37	0.00	0.00
B13-SELR-W11	PEM/PFO	SAT	3.21	3.23	Danbury	Fairfield	68.20	0.09	0.02	0.02	0.00	0.00
B13-SELR-W11	PEM/PFO	SAT	3.23	3.23	Danbury	Fairfield	17.39	0.09	0.02	0.02	0.00	0.00
B13-SELR-W1	PEM	SAT	3.33	3.34	Danbury	Fairfield	24.72	0.15	0.00	0.00	0.00	0.00
B13-SELR-W2	PEM/PFO	SAT	3.42	3.43	Danbury	Fairfield	86.09	0.23	0.02	0.07	0.00	0.00
B13-SELR-W3	PEM/PFO	SAT	3.54	3.59	Danbury	Fairfield	261.54	0.33	0.09	0.19	0.00	0.00
B13-SELR-W4	PEM/PFO	Dry	3.70	3.72	Danbury	Fairfield	117.93	0.15	0.08	0.14	0.00	0.00
B13-SELR-W5	PEM/PFO	SAT	3.82	3.86	Danbury	Fairfield	208.22	0.24	0.08	0.01	0.00	0.00
B13-SELR-W7	PEM/PFO	HWT	4.08	4.12	Danbury	Fairfield	193.43	0.23	0.11	0.25	0.00	0.00
Line-36A Loop Extensio	n											
A13-CCS-W1	PFO/PEM	SAT	0.03	0.05	Cromwell	Middlesex	88.16					
A13-CCS-W1	PFO/PEM	SAT	0.05	0.06	Cromwell	Middlesex	71.45	0.09	0.04	0.04	0.02	0.01
A13-CCS-W1	PFO/PEM	SAT	0.13	0.14	Cromwell	Middlesex	54.08					
B13-CLR-W2	PFO/PEM	SF/ SAT	0.74	0.80	Cromwell	Middlesex	319.00					
B13-CLR-W2	PFO/PEM	SF/ SAT	0.81	0.81	Cromwell	Middlesex	16.62	0.72	0.77	0.78	0.49	0.48
B13-CLR-W2	PFO/PEM	SF/ SAT	0.82	0.92	Cromwell	Middlesex	517.61	0.72	0.77	0.70	0.49	0.40
B13-CLR-W2	PFO/PEM	SF/ SAT	0.92	0.93	Cromwell	Middlesex	17.75					
B13-CLR-W3 <sup>9</sup>	PFO/PEM	SAT	1.17	1.22	Cromwell	Middlesex	265.40	0.22	0.23	0.06	0.16	0.00
B13-CLR-W4	PFO/PEM	SAT	1.28	1.31	Cromwell	Middlesex	186.10					
B13-CLR-W4	PFO/PEM	SAT	1.32	1.33	Cromwell	Middlesex	41.75	0.34	0.19	0.04	0.14	0.01
B13-CLR-W4	PFO/PEM	SAT	1.34	1.36	Cromwell	Middlesex	98.25	]				

					TABLE K-1	(cont'd)						
				Wet	lands Crossed b	y the AIM Projec	et					
									Vetland mpacted <sup>e</sup>		Total Wetland	Total Forested
Facility, State, Wetland ID	NWI Classification <sup>a</sup>	Hydro <sup>b</sup>	Enter Milepost <sup>c</sup>	Exit Milepost °	Town	County	Crossing Length (feet) <sup>d</sup>	Within Existing ROW	Outside of Existing ROW	Total Forested Wetland Acreage Impacted <sup>e</sup>	Acreage Impacted by Mainten- ance f	Wetland Acreage Impacted by Mainten- ance <sup>f</sup>
E-1 System Lateral Take			1	I		T	1		1		T	1
B13-ELR-W200	PEM/PFO	SAT	0.01	0.07	Lebanon	New London	317.83	0.26	0.46	0.29	0.07	0.00
A13-ELR-W1	PEM/PSS/ PFO	SF/ SAT	0.69	0.82	Lebanon	New London	678.50	0.54	0.59	0.56	0.15	0.11
B13-ELR-W3	PEM/PFO	SAT	1.46	1.49	Lebanon	New London	0	0.00	0.08	0.00	0.00	0.00
B13-ELR-W4	PEM1/PFO1	SF/ SAT	1.82	1.86	Lebanon	New London	229.08	0.29	0.12	0.21	0.00	0.00
A13-ELR-W2	PEM/PFO	PF	1.95	1.96	Lebanon	New London	67.29	4.04	4.00	0.00	0.44	0.44
A13-ELR-W2	PEM/PFO	PF	1.97	2.24	Lebanon	New London	1,406.63	1.24	1.28	0.99	0.14	0.11
A13-ELR-W3	PEM/PFO	SF/ SAT	2.33	2.35	Lebanon	New London	111.23	0.09	0.11	0.08	0.03	0.00
A13-ELR-W4	PEM/PFO	SF/ SAT	2.45	2.48	Lebanon	New London	152.30	0.12	0.14	0.10	0.04	0.00
A13-ELR-W5	PEM/PSS/ PFO	SAT	2.54	2.62	Lebanon	New London	405.25	0.00	0.00	0.00	0.40	0.00
A13-ELR-W5	PEM/PSS/ PFO	SAT	2.62	2.62	Lebanon	New London	6.61	0.33	0.38	0.23	0.10	0.00
A13-ELR-W6	PEM/PSS/ PFO	SF/ SAT	2.65	2.69	Lebanon	New London	186.01					
A13-ELR-W6	PEM/PSS/ PFO	SF/ SAT	2.70	2.80	Lebanon	New London	492.20					
A13-ELR-W6	PEM/PSS/ PFO	SF/ SAT	2.82	2.83	Lebanon	New London	61.38					
A13-ELR-W6	PEM/PSS/ PFO	SF/ SAT	2.88	2.91	Lebanon	New London	172.79	1.03	1.22	0.81	0.29	0.03
A13-ELR-W6	PEM/PSS/ PFO	SF/ SAT	2.94	2.96	Lebanon	New London	87.21					
A13-ELR-W6	PEM/PSS/ PFO	SF/ SAT	2.99	3.00	Lebanon	New London	89.13					
A13-ELR-W6	PEM/PSS/ PFO	SF/ SAT	3.03	3.06	Lebanon	New London	168.29					

						TABLE K-1	(cont'd)						
					Wet	lands Crossed by	y the AIM Projec	:t					
										Vetland mpacted <sup>e</sup>	Total	Total Wetland Acreage	Total Forested Wetland
	Facility, State, Wetland ID	NWI Classification <sup>a</sup>	Hydro <sup>b</sup>	Enter Milepost °	Exit Milepost <sup>c</sup>	Town	County	Crossing Length (feet) <sup>d</sup>	Within Existing ROW	Outside of Existing ROW	Forested Wetland Acreage Impacted e	Impacted by Mainten- ance f	Acreage Impacted by Mainten- ance f
	A13-ELR-W8	PEM/PSS/ PFO	SF/ SAT	3.17	3.24	Lebanon	New London	372.66	0.32	0.19	0.04	0.07	0.00
	A13-ELR-W8	PEM/PSS/ PFO	SF/ SAT	3.27	3.28	Lebanon	New London	21.28	0.32	0.19	0.04	0.07	0.00
	A13-ELR-W9	PEM/PFO	SF/ SAT	3.35	3.38	Lebanon	New London	132.42	0.13	0.14	0.12	0.03	0.00
	B13-ELR-W16	PEM/PFO	SAT	4.09	4.14	Franklin	New London	222.58	0.91	1.26	0.00	0.29	0.00
	B13-ELR-W16	PEM/PFO	SAT	4.20	4.39	Franklin	New London	1,000.14	0.91	1.20	0.00	0.29	0.00
Γ	B13-ELR-W15	PEM/PFO	SAT	4.48	4.50	Franklin	New London	0	0.00	0.01	0.00	0.00	0.00
	B13-ELR-W12	PEM1/PFO	SAT	4.87	4.87	Franklin	New London	12.38	0.01	0.01	0.00	0.00	0.00
	B13-ELR-W10	PEM1/PFO1	SAT	4.93	4.94	Franklin	New London	0	0.00	0.01	0.00	0.00	0.00
	B13-ELR-W9	PEM/PFO	SF	5.40	5.53	Franklin	New London	679.69	0.50	0.70	0.49	0.02	0.00
	B13-ELR-W7	PSS1/PFO1	SF	5.59	5.61	Franklin	New London	100.27	0.09	0.04	0.03	0.01	0.00
	B13-ELR-W8	PEM/PFO	SAT	5.65	5.65	Franklin	New London	36.88	0.03	0.02	0.00	0.01	0.00
	B13-ELR-W6	PEM/PFO	SAT	5.67	5.69	Franklin	New London	114.95	0.15	0.28	0.17	0.07	0.04
	B13-ELR-W6	PEM/PFO	SAT	5.74	5.76	Franklin	New London	120.41	0.13	0.20	0.17	0.07	0.04
	B13-ELR-W5	PEM/PFO	SAT	5.84	5.87	Franklin	New London	150.93	0.35	0.23	0.16	0.08	0.04
L	B13-ELR-W5	PEM/PFO	SAT	5.95	6.00	Franklin	New London	274.60	0.55	0.23	0.10	0.00	0.04
	A13-ELR-W11	PEM	SAT	6.09	6.10	Franklin	New London	42.69	0.04	0.01	0.00	0.01	0.00
	A13-ELR-W12	PEM/PFO	SAT	6.32	6.32	Franklin	New London	22.04	0.03	0.08	0.04	0.00	0.00
	A13-ELR-W12	PEM/PFO	SAT	6.33	6.33	Franklin	New London	0.68	0.03	0.06	0.04	0.00	0.00
	A13-ELR-W13	PFO	SAT	6.89	6.89	Franklin	New London	0	0.00	0.00	0.00	0.00	0.00
	A13-ELR-W14	PEM/PFO	SAT	6.95	6.96	Franklin	New London	0	0.02	0.00	0.00	0.00	0.00
	B13-ELR-W23	PFO	SAT	7.11	7.12	Franklin	New London	0	0.00	0.01	0.01	0.00	0.00
Ī	B13-ELR-W22	PEM/PFO	SAT	7.27	7.31	Franklin	New London	195.74	0.15	0.21	0.08	0.05	0.00
	B13-ELR-W21	PFO/PEM	SAT	7.39	7.42	Franklin	New London	155.27	0.13	0.09	0.10	0.03	0.03
	B13-ELR-W20	PFO/PEM	SAT	7.88	7.88	Franklin	New London	36.58	0.02	0.21	0.22	0.05	0.05

### Wetlands Crossed by the AIM Project

									Vetland mpacted <sup>e</sup>	Total	Total Wetland	Total Forested
Facility, State, Wetland ID	NWI Classification <sup>a</sup>	Hydro <sup>b</sup>	Enter Milepost °	Exit Milepost °	Town	County	Crossing Length (feet) <sup>d</sup>	Within Existing ROW	Outside of Existing ROW	Total Forested Wetland Acreage Impacted®	Acreage Impacted by Mainten- ance f	Wetland Acreage Impacted by Mainten- ance f
B13-ELR-W19	PSS/PFO1	SAT	8.31	8.33	Franklin/ Norwich	New London	86.28	0.20	0.18	0.24	0.05	0.05
B13-ELR-W19	PSS/PFO1	SAT	8.36	8.39	Franklin/ Norwich	New London	158.12	0.20	0.16	0.24	0.05	0.05
B13-ELR-W25	PEM/PFO	SAT	8.74	8.76	Norwich	New London	60.65	0.33	0.34	0.42	0.09	0.09
B13-ELR-W25	PEM/PFO	SAT	8.82	8.89	Norwich	New London	326.74	0.33	0.34	0.42	0.09	0.09
B13-ELR-W24	PEM/PFO	SAT	8.92	8.92	Norwich	New London	23.48	0.03	0.00	0.00	0.00	0.00
E-1 System Lateral Loop	Extension											
B13-ELP-W3	PFO/PSS	SAT	0.03	0.04	Montville	New London	0	0	0.02	0.02	0.00	0.00
B13-ELP-W2	PFO/PSS	SAT	0.16	0.17	Montville	New London	26.44	0.01	0.08	0.09	0.02	0.02
B13-ELP-W4	PFO	SAT	0.31	0.40	Montville	New London	486.75					
B13-ELP-W4	PFO/PEM	SAT	0.40	0.43	Montville	New London	126.56	0.42	0.96	0.87	0.41	0.30
B13-ELP-W4	PFO	SAT	0.44	0.50	Montville	New London	302.60					
B13-ELP-W7	PFO	SF/ SAT	1.16	1.19	Montville	New London	138.19	0.1	0.15	0.15	0.06	0.06
						Project Total	30,420.72	28.98	23.28	17.07	4.01	2.27

Notes: ROW = right-of-way; HDD = horizontal directional drill

- a NWI Classifications:
  - PEM Palustrine emergent wetland
  - PSS Palustrine scrub-shrub wetland
  - PFO Palustrine forested wetland
- SAT Saturated; SF Seasonally Flooded; PF Permanently Flooded; HWT High Water Table
- Where the pipeline crosses the wetland; enter milepost, exit milepost, and crossing length reflect the actual pipeline intersection of wetlands. Where the pipeline does not cross the wetland and the construction workspace does, the enter milepost and exit milepost are the first and last mileposts where this occurs and the crossing length is the longest length of the wetland parallel to the pipeline that is crossed.
- d Crossing length of pipeline where the pipe centerline crosses the wetland.
- Total wetland/forested wetland acreage impacted includes impacts associated with all areas within the construction workspace limits, temporary and permanent. Wetlands crossed by HDD would not be impacted outside of designated construction workspace areas.
- Total wetland/forested wetland acreage impacted by maintenance includes impacts associated with new vegetation maintenance areas outside of the existing and currently maintained pipeline right-of-way.
- Indicates partial estimated delineation via aerial imagery within construction workspace.
- Indicates partial estimated delineation via aerial imagery outside of construction workspace.

# APPENDIX L BEDROCK GEOLOGY TABLES

# APPENDIX L

		TABLE L-1
Bedroc	k Geology of th	e Pipeline Facilities for the AIM Project
Facility/Geologic Unit	Length (miles)	Description
Take-up and Relay		
Haverstraw to Stony Point		
Hornblende granite and granite gneiss	3.3	Middle Proterozoic age hornblende granite and granite gneiss with subordinate leucogranite.
Stony Point to Yorktown		
Hornblende granite and granite gneiss	3.0	See description above.
Diorite with hornblende and/or biotite	0.2	Upper Ordovician age diorite with hornblende and/or biotite that is part of the Cortlandt and smaller mafic complexes.
Balmville Limestone	0.4	Middle Ordovician age limestone that is part of the Lorraine, Trenton, and Black River Groups.
Manhattan Formation	0.5	Middle Ordovician age schist with secondary marble and calc-silitic rock.
Manhattan Formation, undivided	0.5	Ordovician age pelitic schists, amphibolites, and part of Trenton Group and Metamorphic Equivalents up to 8,000 feet (2,400 meters). The unit is mapped under Om in digital mapping but can be subdivided into Cambrian eugeosynclinal rocks (Omb, Omc, and Omd) (Fisher et al., 1970). Subunit Omd is comprised of sillimanite-garnet-muscovite-biotite-plagioclase-quartz gneiss. Subunit Omc is comprised of sillimanite-garnet-muscovite-biotite-quartz-plagioclase schistose gneiss, sillimanite nodules, and local quartz-rich layers. Subunit Omb is comprised of a discontinuous unit of amphibolite and schist.
Biotite augite norite	1.8	Upper Ordovician norite that is part of the Cortlandt and smaller mafic complexes.
Hornblende norite	2.0	Upper Ordovician norite that is part of the Cortlandt and smaller mafic complexes. The hornblende is poikilitic.
Olivine Pyroxenite	0.3	Upper Ordovician pyroxenite with poikilitic hornblende that is part of the Cortlandt and smaller mafic complexes. A secondary rock type is peridotite.
Muscovite-biotite granodiorite	2.2	Upper Devonian age muscovite-biotite granodiorite that is part of the Peekskill Pluton.
Muscovite-biotite granite	0.7	Upper Devonian granite that is part of the Peekskill Pluton.
Water	0.7	Water
Southeast to MLV 19		
Manhattan Formation, undivided	0.1	See description above.
Gneiss of highlands massifs	1.5	Proterozoic age gneiss with secondary amphibolite and schist that was part of the proto-North American terrane. It may include a mixture of rock types when they are not mapped separately, including pink granitic gneiss (Ygr), Augen gneiss (Yga), layered gneiss (Ygn), Hornblende gneiss and amphibolite (Ygh), and rusty mica schist and gneiss.
Stockbridge marble	0.2	Lower Ordovician and Cambrian age white to gray, massive to layered marble, generally dolomitic but containing calcite marble in the upper part, locally interlayered with schist or phyllite and with calcareous siltstone or sandstone. The Stockbridge Marble represents the carbonate shelf of the Proto-North American terrane.
Basal marble member of Walloomsac schist	0.3	Middle Ordovician dark gray to white, massive to layered schistose or phyllitic calcite-phlogopite marble.

	Т	ABLE L-1 (cont'd)
Bedrock	Geology of th	e Pipeline Facilities for the AIM Project
State/Facility/Geologic Unit	Length (miles)	Description
Hornblende gneiss and amphilolite	8.0	Proterozoic age hornblende gneiss and amphibolite that is dark gray to mottled, fine- to medium-grained, massive to foliated amphibolite and gneiss, composed of hornblende and plagioclase with biotite and minor quartz. This formation is often interlayered with banded felsic gneiss and locally contains calc-silicate rock or diopsidic calcite marble.
Pink granite gneiss	1.6	Proterozoic granitic gneiss that is light pink to gray in color, medium to coarse texture, foliated but generally massive or poorly layered granitic gneiss having quartz, microline, oligoclase, and either biotite or muscovite (or both), with amphibole or epidote occurring locally.
E-1 System Lateral		
Lebanon Gabbro	1.0	Devonian age, dark, speckled, massive (but locally sheared) gabbro, composed of hornblende, labradorite, and opaques. Some rock bodies contain biotite and quartz, and some smaller bodies are almost pure hornblende with local augite. The Lebanon Gabbro is part of the lapetus (Oceanic) Terrane and the Merrimack Synclinorium.
Hebron Gneiss	3.4	Silurian and Ordivician age interlayered dark-gray colored, medium to coarse-grained schist, composed of andesine, quartz, biotite, and local potassium feldspar and greenish-grey, fine to medium-grained calc-silicate rock, composed of labradorite, quartz, biotite, anctinolite, hornblende, and diopside, with local scapolite. There are local lenses of graphitic two-mica schist. The Hebron Gneiss is part of the lapetus (Oceanic) Terrane and the Merrimack Synclinorium.
Brimfield Schist	0.2	Upper (possibly) and middle Ordivician age gray colored (weathering to rust), medium to coarse-grained, interlayered schist and gneiss, composed of oligoclase, quartz, potassium feldspar, and biotite, commonly with garnet, sillimanite, graphite, and pyrrhotite. Potassium feldspar often occurs as augen 1 to 3 centimeters across. Minor layers and lenses include hornblende- and pyroxene-bearing gneiss, amphibolite, and calc-silicate rock.
Dioritic phase of Lebanon Gabbro	0.1	Devonian age white to black, streaked, medium-grained, foliated or sheared mafic gneiss, composed of plagioclase, biotite, quartz, and often hornblende.
Scotland Schist	2.5	Devonian or Silurian age silvery (with local rust coloration), fine- to medium-grained schist containing quartz, muscovite, biotite, staurolite, and oligoclase (locally with kyanite or sillimanite) and interlayered with quartz-oligoclase-biotite schist and granofels and quartzite, typically near the base and on the west side of the formation. The Scotland Schist is part of the lapetus (Oceanic) Terrane and the Merrimack Synclinorium.
Quartzite unit in Scotland Schist	0.3	Devonian or Silurian age quartzite, generally micaceous, interlayered with mica schist.
Canterbury Gneiss	1.1	Devonian age light gray, medium grained, variably foliated, locally strongly lineated gneiss. Composed of quartz, oligoclase, microcline, and biotite, typically with megacrysts 1 to 2 centimeters long on either of both feldspars.
Yantic Member of Tatnic Hill Formation	0.5	Upper and Middle Ordovician age medium to dark gray, fine- to medium-grained schist, composed of quartz, oligoclase, biotite, and muscovite, some layers with garnet, staurolite, and kyanite or garnet and sillimanite, local epidote, or potassium feldspar and some layers of rusty-weathering graphitite, pyrrhotitic, two-mica schist.

		ABLE L-1 (cont'd)
Bedroo		e Pipeline Facilities for the AIM Project
State/Facility/Geologic Unit	Length (miles)	Description
Loop Extension		
Line-36A Loop		
Portland arkrose	2.0	Lower Jurassic age reddish-brown to maroon colored micaceous arkose and siltsone and red to black fissile silty shale. On the east it grades into coarse conglomerate.
E-1 System Lateral Loop Extension		
Waterford Group	<0.1	Light to dark, generally medium-grained gneiss, composed of plagioclase, quartz, and biotite, with hornblende in some layers and microcline in others. There are layers of amphibolite. The Waterford group is Proterozoic in age and part of the Avalonian Terrane and the Avalonian Anticlinorium.
Plainfield Formation	0.8	Comprised of several rock types: Intelayered light gray, thin-bedded quartzite, in places with feldspar, mica, graphite, or pyrite; light to medium gray gneiss composed of quartz, oligoclase, and biotite; medium to dark gray schist composed of quartz, oligoclase, biotite, sillimanite, and garnet; dark gray or green gneiss composed of plagioclase, quartz, biotite, and hornblende; and amphibolite, diopsite bearing quartzite, and calc-silicate rock. The Plainfield Formation is Proterozoic in age and part of the Avalonian Terrane and the Avalonian Anticlinorium.
Hope Valley Alaskite Gneiss	0.5	Light pink to gray, medium- to coarse-grained, locally porphyritic, variably lineated and foliated alaskitic gneiss, composed of microclinic quartz, albite or oligoclase, and minor magnetite, and locally biotite and muscovite. The Hope Valley Alaskite Gneiss is Proterozoic in a and part of the Avalonian Terrane, the Avalonian Anticlinorium, and the Sterling Plutonic Group.
Potter Hill Granite Gneiss	<0.1	Light pink to gray (weathering tan) fine- to medium-grained, rarely porphyritic, well-foliated granitic gneiss composed of microcline, quartz, oligoclase (or albite), biotite, and magnetite, minor muscovite and local garnet. The Potter Hill Granite Gneiss is Proterozoic in age and part of the Avalonian Terrane and the Avalonian Anticlinorium.
New Pipeline		
West Roxbury Lateral		
Westwood Granite	0.2	Proterozoic age light gray to pinkish gray, fine to medium-grained granite.
Dedham Grainte	4.9	Proterozoic age, light grayish-pink to greenish-gray, equigranular to slightly porphyritic, variably altered granite with secondary diorite and quartz monzonite.

### Sources:

Fisher D.W.; Y. W. Isachsen, L. V. Rickard, 1970, Geologic Map of New York State, consisting of 5 sheets: Niagara, Finger Lakes, Hudson-Mohawk, Adirondack, and Lower Hudson, New York State Museum and Science Service, Map and Chart Series No. 15, scale 1:250,000.

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		TABLE L-2
Bedrock (	Geology of the Ab	poveground Facilities for the AIM Project
Facility/Geologic Unit	Area Affected During Construction (acres)	Description
Existing Compressor Station Modifications		
Stony Point Compressor Station		
Hornblende granite and granite gneiss	20.3	Middle Proterozoic age hornblende granite and granite gneiss with subordinate leucogranite.
Southeast Compressor Station		
Manhattan Formation, undivided	15.9	Ordovician age pelitic schists, amphibolites, and part of Trenton Group and Metamorphic Equivalents up to 8,000 feet (2,400 meters). The unit is mapped under Om in digital mapping but can be subdivided into Cambrian eugeosynclinal rocks (Omb, Omc, and Omd) (Fisher et al., 1970). Subunit Omd is comprised of sillimanite-garnet-muscovite-biotite-plagioclase-quartz gneiss. Subunit Omc is comprised of sillimanite-garnet-muscovite-biotite-quartz-plagioclase schistose gneiss, sillimanite nodules, and local quartz-rich layers. Subunit Omb is comprised of a discontinuous unit of amphibolite and schist.
Oxford Compressor Station		
Waterbury Gneiss	0.0	Proterazoic or Cambiran age gneiss. Medium to dark gray, fine to medium grained, typically irregularly foliated and lenticular. Composed of biotite, quartz, oligoclase, kyanite, and garnet.
Cromwell Compressor Station		
Portland arkose	14.9	Lower Jurassic age reddish-brown to maroon colored micaceous arkose and siltsone and red to black fissile silty shale.
Chaplin Compressor Station		
Hebron gneiss	11.7	Silurian and Ordivician age interlayered dark-gray colored, medium to coarse-grained schist, composed of andesine, quartz, biotite, and local potassium feldspar and greenish-grey, fine to medium-grained calc-silicate rock, composed of labradorite, quartz, biotite, anctinolite, hornblende, and diopside, with local scapolite. There are local lenses of graphitic two-mica schist. The Hebron Gneiss is part of the lapetus (Oceanic) Terrane and the Merrimack Synclinorium.
Burrillville Compressor Station		
Esmond igneous suite	16.7	Late Proterozoic age granodiorite. Gray, greenish, or pale pink in color. Medium to coarse-grained primarily porphyritic rock composed or microcline, perthite, plagioclase, quartz, and accessory biotite, epidote, zircon, allanite, monazite, apatite, sphene, and opaque minerals.
Existing M&R Station Modifications		
Stony Point M&R Station		
Muscovite-biotite granondirorite	2.2	Upper Devonian age muscovite-biotite granodiorite that is part of the Peekskill Pluton.
Peekskill M&R Station		
Biotite augite norite	2.1	Upper Ordovician norite that is part of the Cortlandt and smaller mafic complexes.
Cortlandt M&R Station		
Hornblende granite and granite gneiss	3.8	See description above.

	TA	BLE L-2 (cont'd)
Bedrock	Geology of the Ab	oveground Facilities for the AIM Project
Facility/Geologic Unit	Area Affected During Construction (acres)	Description
West Danbury M&R Station		
Gneiss of Highlands massifs	2.6	Proterozoic age gneiss with secondary amphibolite and schist that was part of the proto-North American terrane. It may include a mixture of rock types when they aren't mapped separately, including pink granitic gneiss (Ygr), Augen gneiss (Yga), layered gneiss (Ygn), Hornblende gneiss and amphibolite (Ygh), and rusty mica schist and gneiss.
Southbury M&R Station		
Taine Mountain Formation	0.6	Lower Ordovician age granofels that includes the Taine Mountain Formation.
Collinsville Formation	<0.1	Middle Ordovician age gneiss with secondary amphibolite, felsic, and mafic metavolcanic rocks and granulite.
Waterbury M&R Station		
Waterbury Gneiss	0.4	See description above.
North Haven M&R Station		
New Haven Arkose	0.5	Upper Triassic and possibly lower Triassic age red, pink, and gray colored coarse-grained poorly sorted and indurated arkose, with conglomerate locally, that is interbedded with brick-red micaceous, locally shaly siltstone and fine-grained feldspathic clayey sandstone.
Guilford M&R Station		
Waterford Group, Stony Creek Granite Gneiss and Narragansett Pier Granite Undivided	0.4	Proterozoic age gneiss and granitic gneiss intruded by Permian age gneiss with considerable pegmatite formations.
Waterford Group	0.1	Light to dark, generally medium-grained gneiss, composed of plagioclase, quartz, and biotite, with hornblende in some layers and microcline in others. There are layers of amphibolite. The Waterford group is Proterozoic in age and part of the Avalonian Terrane and the Avalonian Anticlinorium.
Farmington M&R Station		
New Haven arkose	0.4	See description above.
Glastonbury M&R Station		
Portland arkose	0.7	See description above.
Glastonbury Gneiss	0.1	Ordovician age gray, medium to coarse grained, massive to well folicated granitoid gneiss composed of oligoclase, quartz, microcline, and biotite.
Middletown M&R Station		
Maromas Granite Gneiss	0.5	Devonian age light-gray to buff colored, medium- to fine-grained granitic gneiss, composed of quartz and microcline with minor plagioclase and biotite. Pegmatite bodies are common in the vicinity.
Salem Pike M&R Station		
Tatnic Hill Formation	0.2	Ordovician age medium to dark gray, medium-grained gneiss or schist composed of quartz, andesine, biotite, garnet, and sillimanite (locally kyanite, muscovite, or potassium feldspar) that is interlayered with graphitic pyrrhotitic two-mica schist, amphibolite, and calc-silicate rock.

	TA	BLE L-2 (cont'd)
Bedroo	k Geology of the Ab	oveground Facilities for the AIM Project
Facility/Geologic Unit	Area Affected During Construction (acres)	Description
Montville M&R Station		
Waterford Group	1.0	See description above.
Plainfield Formation	0.2	Comprised of several rock types: intelayered light gray, thin-bedded quartzite, in places with feldspar, mica, graphite, or pyrite; light to medium gray gneiss composed of quartz, oligoclase, and biotite; medium to dark gray schist composed of quartz, oligoclase, biotite, sillimanite, and garnet; dark gray or green gneiss composed of plagioclase, quartz, biotite, and hornblende; and amphibolite, diopsite-bearing quartzite, and calc-silicate rock. The Plainfield Formation is Proterozoic in age and part of the Avalonian Terrane and the Avalonian Anticlinorium.
Willimantic M&R Station		
Tatnic Hill Formation	0.9	See description above.
Pomfret M&R Station		
Scotland Schist	0.4	Devonian or Silurian age silvery (with local rust coloration), fine- to medium-grained schist containing quartz, muscovite, biotite, staurolite, and oligoclase (locally with kyanite or sillimanite) and interlayered with quartz-oligoclase-biotite schist and granofels and quartzite, typically near the base and on the west side of the formation. The Scotland Schist is part of the lapetus (Oceanic) Terrane and the Merrimack Synclinorium.
Putnam M&R Station		
Tatnic Hill Formation	0.3	See description above.
North Fall River M&R Station		
Granite of Fall River pluton	1.5	Proterozoic age light-gray, medium-grained, biotite granite, partially mafic-poor.
New Bedford M&R Station		
Gneiss and schist near New Bedford	1.8	Proterozoic age hornblende and biotite schist and gneiss, amphibolite.
Middleborough M&R Station		
Granite, gneiss, and schist	0.6	Plutonic and metamorphic rocks, which are probably Proterozoic in age.
Brockton M&R Station		
Rhode Island Formation	0.6	Upper and Middle Pennsylvanian age gray sandstone, graywacke, shale, and conglomerate and black shale. Also contains minor meta-anthracite beds.
Norwood M&R Station		
Wamsuttea Formation	0.8	Middle to Lower Pennsylvanian age, red to pink colored, well-sorted conglomerate, greywacke, sandstone, and shale.
Needham M&R Station		
Roxbury Conglomerate	0.4	Proterozoic to early Paleozoic age conglomerate, sandstone, siltstone, argillite, and metaphyre.
Wellesley M&R Station		
Roxburry Conglomerate	0.5	See description above.
Mystic M&R Station		
Cambridge Argillite	0.7	Proterozoic to early Paleozoic age gray argillite to minor quartzite with some sandstone and conglomerate.

	TA	BLE L-2 (cont'd)		
Bedrock Geology of the Aboveground Facilities for the AIM Project				
Facility/Geologic Unit	Area Affected During Construction (acres)	Description		
New M&R Stations				
Oakland Heights M&R Station				
Tatnic Hill Formation	2.4	See description above.		
Assonet M&R Station				
Granite of Fall River pluton	1.5	See description above.		
West Roxbury M&R Station				
Dedham Granite	1.0	Proterozoic age, light grayish-pink to greenish-gray, equigranular to slightly porphyritic, variably altered granite with secondary diorite and quartz monzonite.		
Existing M&R Station Removal				
Greenville M&R Station				
Tatnic Hill Formation	0.3	See description above.		

Sources:

- Fisher D.W.; Y. W. Isachsen, L. V. Rickard, 1970, Geologic Map of New York State, consisting of 5 sheets: Niagara, Finger Lakes, Hudson-Mohawk, Adirondack, and Lower Hudson, New York State Museum and Science Service, Map and Chart Series No. 15. scale 1:250.000.
- New York State Museum, NYS Geological Survey, NYS Museum Technology Center, 1999, 1:250,000 Bedrock geology of NYS, data is distributed in ARC/INFOr EXPORT format (with ".e00" extension) in 5 separate files based on printed map sheets, <a href="http://www.nysm.nysed.gov/gis.html">http://www.nysm.nysed.gov/gis.html</a>. Accessed on July 16, 2010.
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# APPENDIX M PRELIMINARY CONCEPTUAL MITIGATION PLAN



# ALGONQUIN INCREMENTAL MARKET PROJECT

**Preliminary Conceptual Mitigation Plan** 

**Revised June 2014** 



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# ACRONYMS AND ABBREVIATIONS

AIM Algonquin Incremental Market
Algonquin Gas Transmission, LLC

BMPs best management practices
CFR Code of Federal Regulations

CTDEEP Connecticut Department of Energy & Environmental Protection

E&SCP Erosion and Sediment Control Plan FERC Federal Energy Regulatory Commission

FERC Procedures FERC's Wetland and Waterbody Construction and Mitigation

Procedures

HDD horizontal directional drill

hp horsepower
MLV mainline valve
MP milepost

M&R metering and regulating NGA Natural Gas Act

NYSDEC New York State Department of Environmental Conservation

OHWM ordinary high water mark
PAR Permanent Access Road
PEM palustrine emergent
PFO palustrine forested

Plan Conceptual Mitigation Plan

Project AIM Project

PSS palustrine scrub-shrub

ROW right-of-way

TAR temporary access road

U.S. United States

USACE U.S. Army Corps of Engineers USGS U.S. Geological Survey



# 1.0 INTRODUCTION

This Conceptual Mitigation Plan ("Plan") describes the methods that will be implemented during construction of the Algonquin Gas Transmission, LLC ("Algonquin") Incremental Market Project ("AIM Project") to minimize, avoid, and mitigate for temporary and permanent impacts to wetlands and waterbodies. This Plan also includes a brief description of the Project and a listing of wetland and waterbody temporary and permanent impacts. The AIM Project location is depicted on Figure 1.1-1 in Resource Report 1.



## 2.0 PROJECT DESCRIPTION

Algonquin, an indirect, wholly-owned subsidiary of Spectra Energy Partners, LP, is seeking authorization from the Federal Energy Regulatory Commission ("FERC" or "Commission") pursuant to Section 7(c) of the Natural Gas Act¹ ("NGA") to construct, install, own, operate, and maintain the AIM Project which will involve expansion of its existing pipeline system located in New York, Connecticut, Rhode Island and Massachusetts. Algonquin is also seeking authorization pursuant to Section 7(b) of the NGA² to abandon certain segments of existing mainline pipeline as a related component of the AIM Project. The AIM Project will create 342,000 dekatherms per day of firm transportation capacity to deliver natural gas to the Northeast markets to meet immediate and future supply and load growth requirements of the Project Shippers as defined in Section 1.2 of Resource Report 1. Specifically, the Project will create additional pipeline capacity from the Ramapo, New York receipt point on the Algonquin system to various Algonquin city gate delivery points in Connecticut, Rhode Island, and Massachusetts. The target in-service date for the AIM Project is November 1, 2016.

The AIM Project includes the construction of approximately 37.6 miles of take-up and relay, loop and lateral pipeline facilities, modifications to six existing compressor stations resulting in the addition of 81,620 horsepower ("hp") of compression, modifications to 24 existing metering and regulating ("M&R") stations, the construction of three new M&R stations and the removal of one existing M&R station. These proposed Project facilities are located in New York, Connecticut, Rhode Island and Massachusetts. Refer to Figure 1.1-1 in Resource Report 1 for a Project overview map that shows the location of all proposed facilities and their association with Algonquin's existing pipeline facilities. A complete discussion of the proposed Project facilities follows.

## **Proposed Pipeline Facilities**

The proposed AIM Project includes approximately 37.6 miles of pipeline composed of the following facilities:

- ➤ Construction of approximately 20.1 miles of mainline pipeline, comprised of the following:
  - Haverstraw to Stony Point Take-up & Relay Take-up and relay 3.3 miles of 26-inch diameter pipeline with 42-inch diameter pipeline in Rockland County, New York upstream of Algonquin's existing Stony Point Compressor Station;
  - Stony Point to Yorktown Take-up & Relay Take-up and relay 9.4 miles of 26-inch diameter pipeline with 42-inch diameter pipeline and the installation of an approximately 2.9-mile section of new pipeline ROW that includes a 0.7-mile horizontal directional drill ("HDD") crossing of the Hudson River. This 12.3-mile segment is located in Rockland County, New York and Westchester County, New York downstream of Algonquin's existing Stony Point Compressor Station; and
  - Southeast to MLV 19 Take-up & Relay Take-up and relay 4.5 miles of 26-inch diameter mainline pipeline with 42-inch diameter pipeline (including a new 0.7-mile long, 42-inch diameter HDD pipeline crossing of Interstate 84 and the Still River) located in Putnam County, New York and Fairfield County, Connecticut downstream of and between Algonquin's existing Southeast Compressor Station and mainline valve ("MLV") 19;

<sup>&</sup>lt;sup>1</sup> 15 U.S.C. §§ 717f(b) and 717f(c) (2006).

<sup>&</sup>lt;sup>2</sup> 15 U.S.C. § 717P(b) (2006).



- ➤ <u>Line-36A Loop Extension</u> Installation of 2.0 miles of 36-inch diameter pipeline loop extension in Middlesex County, Connecticut and Hartford County, Connecticut downstream of Algonquin's existing Cromwell Compressor Station;
- ➤ E-1 System Lateral Take-up & Relay Take-up and relay 9.1 miles of 6-inch diameter pipeline with 16-inch diameter pipeline on Algonquin's existing E-1 System in New London County, Connecticut;
- ➤ E-1 System Lateral Loop Installation of 1.3 miles of 12-inch diameter pipeline loop on Algonquin's existing E-1 System in New London County, Connecticut;
- ➤ <u>West Roxbury Lateral</u> Installation of 4.2 miles of new 16-inch diameter pipeline and 0.9 miles of new 24-inch diameter pipeline off of Algonquin's existing I-4 System in Norfolk and Suffolk Counties, Massachusetts.

### Modifications to Existing Algonquin Compressor Stations

Algonquin will modify six existing Algonquin compressor stations to add an additional 81,620 hp to its pipeline system as part of the AIM Project. This increase in horsepower will be achieved with the installation of six new compressor units. The proposed compressor modifications include the following:

## Stony Point Compressor Station - Rockland County, New York

- Install two (2) Solar Mars 100 (15,900 hp each) natural gas-fired compressor units;
- Restage one (1) existing compressor driven by a Solar Taurus 60 natural gas-fired turbine;
- Install gas cooling for the new units; and
- Station piping modifications.

## Southeast Compressor Station - Putnam County, New York

- Install one (1) Solar Taurus 70 (10,320 hp) natural gas-fired turbine compressor unit;
- Restage one (1) existing compressor driven by a Solar Taurus 70 natural gas-fired turbine;
- Replace the compressor body driven by an existing Solar Mars 90 natural gas fired turbine;
- Install gas cooling for the new unit; and
- Station piping modifications.

## Oxford Compressor Station - New Haven County, Connecticut

• Restage one (1) existing compressor driven by a Solar Taurus 60 natural gas-fired turbine;

## <u>Cromwell Compressor Station</u> - Middlesex County, Connecticut

- Install one (1) Solar Mars 100 (15,900 hp) natural gas-fired turbine compressor unit;
- Install gas cooling for the new unit and two (2) existing turbine compressor units; and
- Station piping modifications.

## Chaplin Compressor Station - Windham County, Connecticut

- Install one (1) Solar Taurus 60 (7,700 hp) natural gas-fired turbine compressor unit;
- Restage two (2) existing compressors driven by Solar Taurus 60 natural gas-fired turbines;
- Install gas cooling for the new unit and two (2) existing turbine compressor units; and
- Station piping modifications.

## Burrillville Compressor Station - Providence County, Rhode Island

- Install one (1) Solar Mars 100 (15,900 hp) natural gas-fired turbine compressor unit;
- Restage two (2) existing compressors driven by Solar Taurus 60 natural gas-fired turbines;



- Install gas cooling for the new unit; and
- Station piping modifications.

### Modifications to Existing Algonquin M&R Stations

The AIM Project will include modifications to 24 existing Algonquin M&R stations in New York, Connecticut and Massachusetts, to accept the new gas flows associated with the AIM Project. Three M&R stations are located in New York, 13 are located in Connecticut and eight are located in Massachusetts. The types of modifications will include the replacement of existing heaters and metering facilities, piping modifications, and facility uprates. In addition, one existing M&R station (Greenville) will be removed in Connecticut.

Modifications at 21 of these existing stations are minor in nature and will take place within the existing fenced facilities. Three of the remaining M&R stations will require complete reconstruction and one will be decommissioned and removed (Greenville M&R). The stations requiring reconstruction are all in Connecticut and include the Willimantic M&R Station, Guilford M&R Station and Glastonbury M&R Station. The Glastonbury and Guilford M&R stations will be rebuilt within the same station footprint while the Willimantic M&R Station will be rebuilt on a new parcel of land being acquired by Algonquin adjacent to the existing station property. The M&R station locations are shown on the United States Geological Survey ("USGS") quadrangle excerpts and aerial photo based site plans provided in Appendix 1A of Resource Report 1.

## Construction of New Algonquin M&R Stations

Algonquin will construct three new M&R stations: two are located in Bristol and Suffolk counties in Massachusetts and one is located in New London County, Connecticut.

- Construct one (1) new M&R station in Connecticut:
  - Oakland Heights M&R Station construct a new M&R station, including regulation, in the City of Norwich, New London County.
- Construct two (2) new M&R stations in Massachusetts:
  - Assonet M&R Station construct a new M&R station, including regulation, in the Town of Freetown, Bristol County; and
     West Roxbury M&R Station construct a new M&R station, including regulation, in the City of Boston, Suffolk County.



## 3.0 WETLANDS

Wetlands are defined by the U.S. Army Corps of Engineers ("USACE") as areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions, including swamps, marshes, bogs, and bottomlands. Algonquin delineated wetland boundaries using the methodology described in the USACE's Wetlands Delineation Manual (Environmental Laboratory, 1987) and Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2). The 1987 Manual and more recent supplements identify three environmental factors to consider when making wetland determinations: indicators of hydrophytic vegetation, hydric soil, and wetland hydrology.

## 3.1 Wetlands Crossed by the Project

Field surveys were conducted within a 300-foot wide study area across the Project area to identify and map wetlands, except for the West Roxbury Lateral where the study corridor was variable due to the developed nature of that route. Based on this survey, a total of 163 wetland crossings were identified in the AIM Project construction workspace; 77 in New York and 86 in Connecticut. The AIM Project facilities proposed in Rhode Island and Massachusetts will not cross any wetlands. The complete listing of wetland crossings, including crossing length and total impact to each wetland, is provided in Table 2D-1 located in Appendix 2D, Resource Report 2.

## 3.1.1 Pipeline Facilities

#### New York

The AIM Project facilities in New York will have a total of 77 wetland crossings. These wetlands are primarily characterized as PEM wetlands that are dominated by *Phragmites australis* in the right-of-way ("ROW") and as palustrine forested ("PFO") wetlands off the maintained ROW. Wetlands along the Haverstraw to Stony Point Take-up and Relay segment were located in areas of topographic relief given that this survey area is extremely hilly. Sloping stream drainages were often associated with bordering wetlands. A particularly large wetland system in the Town of Haverstraw is associated with tributaries to Minisceongo Creek. Wetlands within the maintained pipeline ROW along the Stony Point to Yorktown Take-up & Relay segment are also dominated by *Phragmites australis* while the off-ROW sections are primarily wooded. A large wetland system is encountered in the drainage area of Dickey Brook and its tributaries in the Town of Cortlandt. Within the Blue Mountain Reservation, there are also several large wetland systems crossed by the pipeline.

New York State has mapped wetland areas that are regulated under its Freshwater Wetlands Act. There are five New York State Department of Environmental Conservation ("NYSDEC") mapped wetlands that are crossed or are in close proximity to the pipeline ROW along the Stony Point to Yorktown Take-up & Relay pipeline. Algonquin has discussed and confirmed these crossings in a meeting with NYSDEC on December 5, 2013. These areas include the following:

#### > Town of Cortlandt

 NYSDEC Wetland P-3 – This is a Class 1 wetland that is crossed by the Stony Point to Yorktown Take-up & Relay pipeline between milepost ("MP") 7.70 and MP 7.85. This NYSDEC mapped wetland has been field delineated as B13-SPLR-W13 for the AIM Project.



- NYSDEC Wetland P-1 This is a Class 2 wetland that is crossed between MP 8.50 and MP 8.75. This NYSDEC mapped wetland has been field delineated as A13-SPLR-W2 for the AIM Project.
- NYSDEC Wetland A-35 This is a Class 2 wetland that is crossed in two areas north of Crompond Road. The first wetland crossing occurs between MP 10.63 and MP 10.68 and the second is crossed between MP 10.79 and MP 10.81. These wetlands have been assigned the following identification numbers for the AIM Project: B13-SPLR-W23 and B13-SPLR-W25.

#### > Town of Yorktown

NYSDEC Wetland A-10 – This is a Class 2 wetland that is crossed between MP 11.04 and MP 11.12 on the east side of Lexington Avenue. This wetland has been field delineated as B13-SPLR-W26 for the AIM Project.

#### > Town of Southeast

O NYSDEC Wetland BR-36 – This is a Class 2 wetland that is located along the western edge of the existing Southeast Compressor Station in Putnam County. The proposed work at the compressor station will not impact this wetland but construction workspace is located within the 100-foot Adjacent Area. This wetland has been field delineated as A13-SECS-W1 for the AIM Project.

Wetlands are also regulated by the municipalities along the AIM Project route in New York State and generally include wetlands smaller than wetlands regulated by NYSDEC under New York State law. Accordingly, the delineations provided above include all wetland areas, not just those sized 12.4 acres pursuant to NYSDEC regulations.

#### Connecticut

The AIM Project facilities in Connecticut will have a total of 86 wetland crossings. These wetlands vary greatly between segments but for the most part consist of PEM wetlands within the existing ROW and PFO wetlands outside the existing ROW.

The Southeast to MLV 19 Take-up & Relay pipeline segment crosses 23 wetland areas. Notable are three large wetland systems, one associated with the Sawmill River, one located at MP 0.17 in Danbury, and a third associated with the Still River at MP 1.74. The wetland system associated with the Still River will be crossed by utilizing the HDD method. The majority of the remaining small wetlands were located within heavy residential areas, most often in the ROW as PEM wetlands dominated by *Phragmites australis*.

The Line-36A Loop Extension pipeline segment crosses 11 wetland areas, all associated with streams. This segment of the pipeline is located in an area of relatively flat topography. There is a PEM/PFO wetland system associated with Coles Brook between MP 0.03 and MP 0.14. A tributary to Dividend Brook is associated with a large wetland system dominated by *Phragmites australis* that contains several small intermittent streams and an open water area. The remaining wetlands are dominated by *Phragmites australis* in the ROW and are associated with Dividend Brook.

The E-1 System Lateral Take-up & Relay pipeline segment runs northwest to southeast in a generally parallel orientation with Susquetonscut Brook from MP 0.0 to MP 6.0. As a result of this alignment, there are numerous wetland crossings along this stretch that are associated with minor tributaries of Susquetonscut Brook. Most of these are PEM wetlands located within the existing pipeline ROW. Outside the maintained ROW, the wetland cover type is primarily PFO. South of MP 6.0, the wetlands crossed by the pipeline are associated with small intermittent and ephemeral streams and drainages, the



largest wetlands being located at MP 7.3 and between MP 8.7 and 8.9. These wetlands were classified as PEM wetlands within the ROW and most often classified as PFO wetlands outside the ROW.

The E-1 System Lateral Loop pipeline segment crosses six wetland areas consisting of one large wetland system and three smaller wetland systems along the maintained pipeline ROW. The largest wetland system is crossed between MP 0.31 and MP 0.49 and is predominantly a PFO wetland with a minor stream.

#### **Rhode Island**

There are no wetland impacts in Rhode Island.

## Massachusetts

There are no wetland impacts in Massachusetts.

## 3.1.2 Aboveground Facilities

As proposed, the aboveground facilities will not have an impact on wetlands.

#### 3.1.3 Access Roads

Algonquin is proposing to use existing roads along the AIM Project area as temporary access roads ("TARs") and permanent access roads ("PARs"). Algonquin does not anticipate impacts to any wetlands as a result of the use of these access roads. In areas where wetlands are adjacent to the access road, construction crews will avoid the wetland so that no impact will occur.

## 3.2 Wetland Impacts and Mitigation

Construction of the AIM Project pipeline segments will result in temporary impacts to 52.3 acres of wetlands. Of this amount, 24.0 acres will be impacted by the New York pipeline facilities and 28.3 acres will be impacted by the Connecticut pipeline facilities. Impacts to wetlands associated with the Hudson River in New York and the Still River in Connecticut will be avoided as Algonquin intends to cross these areas utilizing the HDD method. No wetlands will be affected in Rhode Island or Massachusetts and no wetlands will be affected during construction at existing and proposed aboveground facilities.

Construction of the proposed pipeline segments will result in temporary impacts to 35.2 acres of emergent and scrub-shrub wetlands and 17.1 acres of forested wetlands. Approximately 2.3 acres of previously forested wetland will be permanently converted to non-forested cover types and maintained by means of mechanical cutting and mowing as part of pipeline operation. The remaining 14.8 acres of forested wetland will be allowed to revert to a forested state following construction and restoration of the ROW. Table 2D-1 located in Appendix 2D of Resource Report 2 summarizes wetland impacts for the AIM Project facilities.

## 3.2.1 Mitigation and Restoration Measures

Construction and mitigation activities in wetlands will be conducted in accordance with the procedures and best management practices ("BMPs") in the AIM Project Erosion and Sediment Control Plan ("E&SCP") and the conditions of related permits. The E&SCP can be found in Appendix 1B of Resource Report 1.



Algonquin has begun initial discussions with the USACE New England and New York Districts as well as NYSDEC and Connecticut Department of Energy and Environmental Protection ("CTDEEP") to discuss wetland impacts and mitigation.

The AIM Project E&SCP was developed using the FERC's Upland Erosion Control, Revegetation, and Maintenance Plan and Wetland and Waterbody Construction and Mitigation Procedures ("FERC Procedures"). Also reflected in the AIM Project E&SCP is Algonquin's significant experience and practical knowledge of pipeline construction and effective environmental protection measures. Lessons and insights gained from past construction projects have been incorporated into the AIM Project E&SCP. Recommended practices include, wherever practical:

- A reduction of construction corridor widths where possible;
- A 50-foot setback for ATWS for wetlands;
- Minimization of riparian clearing to the extent practicable while ensuring safe construction conditions:
- Expedited construction in and around wetlands;
- Confinement of stump removal to the trench-line to minimize soil disturbance (unless safety or access considerations require stump removal elsewhere);
- Return of wetland bottoms and drainage patterns to their original configurations and contours to the extent practicable;
- Permanent stabilization of upland areas near wetlands as soon as practicable after trench backfilling to reduce sediment run-off;
- Segregation of topsoil in unsaturated wetlands to preserve the native seed source (which will facilitate re-growth of herbaceous vegetation once pipeline installation is complete);
- Utilization of recommended seed mixes as specified by relevant land management agencies;
- Periodic inspection of the construction corridor during and after construction;
- Post-construction wetland monitoring to evaluate the progress of wetland revegetation; and
- Documentation of invasive species prior to construction and post-construction monitoring to compare pre- and post-construction occurrences.

In accordance with the AIM Project E&SCP, Algonquin will conduct post-construction maintenance and monitoring of the ROW in affected wetlands to assess the success of restoration and revegetation. Monitoring efforts will include documenting occurrences of exotic invasive species to compare to preconstruction conditions.

To assist with these periodic monitoring and surveillance efforts, and to comply with the U.S. Department of Transportation Safety Standards (49 CFR Part 192), a 30-foot corridor centered on the pipeline will routinely be cleared of woody growth greater than 15 feet in height, with a 10-foot strip centered over the pipeline being maintained in an herbaceous state. Because of this vegetation maintenance restriction within wetland areas, 20 feet of Algonquin's 50-foot wide permanent ROW easement within wetlands will be allowed to revert to scrub-shrub and forested cover types.

## 3.2.2 Compensatory Mitigation

## **Federal**

The USACE will usually require compensatory mitigation (e.g., purchase of mitigation credits, payment of in-lieu fee, development of a site-specific mitigation plan) for loss of "waters of the U.S." greater than 0.10 acre.



No permanent loss of "waters of the U.S." will occur as a result of the Project. During pipeline trenching operations, fill placement (side-cast material) will be placed back in the pipeline trench. The USACE considers this permanent fill placement even though wetland side-cast material is being replaced in the same trench where it was excavated. The wetland impacts resulting from the fill placement are temporary since the wetland will continue to function as a wetland.

PEM wetlands impacted during construction will be restored in accordance with the FERC Procedures. These areas should quickly recover following construction. Compensatory mitigation for temporary effects to PEM wetlands is not proposed.

Palustrine scrub-shrub ("PSS") wetlands impacted during construction will be restored in accordance with the FERC Procedures. Although the herbaceous understory within these areas should quickly recover following construction, there may be a temporal lag before the sub-canopy reaches maturity. Compensatory mitigation for temporary effects to PSS wetlands is not proposed.

PFO wetland areas not within the maintained permanent ROW impacted during construction will also be restored in accordance with the FERC Procedures. Although these areas will remain in a wetland state, there is a temporal time lag associated with these areas regaining their wetland canopy function. Similarly, forested wetland areas that are located within the new proposed permanent ROW areas will remain in a wetland state but will permanently lose their wetland canopy function.

Algonquin proposes to provide compensatory mitigation for the PFO wetland areas that will be temporarily and permanently affected (through conversion to PEM) as a result of the Project. The USACE New England District will accept payment to an in-lieu fee program<sup>3</sup> for PFO wetland impacts in Connecticut. A permit applicant may make a payment to an in-lieu fee program that will conduct wetland, stream or other aquatic resource restoration, creation, enhancement, or preservation activities. In-lieu fee programs are generally administered by government agencies or non-profit organizations that have established an agreement with the regulatory agencies to use in-lieu fee payments collected from permit applicants.

The USACE New York District will require on-site restoration for temporary PFO wetland impacts (e.g. replant workspace, control invasive species, monitoring). However, the USACE New York District will require off-site mitigation for permanent impacts to forested wetlands from new maintained ROW. Off-site mitigation must be "in-kind", in the same watershed as the impact, and at a 2:1 ratio.

Algonquin proposes to contribute to an approved in-lieu-fee program where acceptable by federal and state agencies, and to conduct on-site or off-site in-kind mitigation where it is not. On-site restoration at agency designated ratios will be the preferred method of mitigation.

## New York<sup>4</sup>

At this time Algonquin has not confirmed state compensatory mitigation requirements for both temporary and permanent PFO wetland impacts in New York. As previously stated temporary impacts to PEM and PSS wetlands will be through restoration of these areas. Temporary disturbances, where pre-construction conditions are essentially restored, for example when laying a pipeline, do not require compensatory

<sup>&</sup>lt;sup>3</sup> Details on the use of the in-lieu fee program are available at http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/final\_mitig\_rule.pdf.

<sup>&</sup>lt;sup>4</sup> Further details on NYSDEC's guidelines on compensatory mitigation are available online at http://www.dec.ny.gov/docs/wildlife\_pdf/wetlmit.pdf.



mitigation since there is no permanent loss. Compensatory mitigation is only used when it can offset project impacts that cannot be avoided entirely or reduced any further. Compensatory mitigation should preferably be "in-kind" and "on-site". In-kind mitigation means replacing a wetland that is being altered with a wetland of the same type, for example replacing emergent marsh with emergent marsh. Functions and benefits of the replacement wetland are assumed to be generally the same as those of the wetland being replaced. On-site mitigation is mitigation undertaken within or contiguous to the wetland impacted by a project. It does not necessarily have to be within the same site boundaries as the project, but it must involve the same wetland. The preferred order of compensatory mitigation is wetland restoration, then creation, and finally enhancement.

The NYSDEC regulates impacts to "mapped wetlands" larger than 12.4 acres in size under the Freshwater Wetlands Act (Environmental Conservation Law Article 24). Impacts to wetlands not mapped will be subject to the mitigation requirements of the USACE New York District described above. At this time it is assumed that the compensatory mitigation proposal submitted to the USACE New York District for PFO impacts will be deemed acceptable to NYSDEC.

## **Connecticut**

At this time Algonquin has not confirmed state compensatory mitigation requirements for both temporary and permanent PFO wetland impacts in Connecticut. As previously stated temporary impacts to PEM and PSS wetlands will be through restoration of these areas. Initial discussions with the CTDEEP has indicated that they will not accept payment to an in-lieu fee program as required by the USACE. Additional discussions with CTDEEP will have to take place to coordinate an appropriate level of mitigation. Algonquin is concerned that two totally distinct compensatory mitigation approaches in Connecticut will be required for the same impacts.

## Massachusetts

There are no wetland impacts associated with proposed Massachusetts Project facilities and, therefore, no compensatory mitigation is proposed in Massachusetts.

## **Rhode Island**

There are no wetland impacts associated with proposed Rhode Island Project facilities and, therefore, no compensatory mitigation is proposed in Rhode Island.



## 4.0 WATERBODIES

A total of 108 surface waterbodies will be affected by construction of AIM Project pipeline facilities. These included 42 perennial streams, 62 intermittent streams, 3 ephemeral streams and 1 pond (see Table 2C-1 in Appendix 2C, Resource Report 2). Of these 108 waterbodies, 90 are minor crossings (less than 10 feet wide), 17 are intermediate crossings (10 to 100 feet wide), and one is a major crossing, the Hudson River (greater than 100 feet wide). Two of the 108 waterbodies are classified as estuarine waterbodies while the remaining 106 are freshwater waterbodies.

No waterbodies will be impacted by the work at the existing and proposed aboveground facilities. However, a few aboveground facility sites are located in relatively close proximity to mapped waterbodies. Algonquin will use existing roads in the AIM Project area as TARs and PARs. Algonquin does not anticipate impacts to any waterbodies as a result of the use of these existing access roads.

In accordance with the FERC Procedures, all waterbody crossings will be completed within 24 to 48 hours. Stream bed and bank contours will be restored in accordance with the FERC Procedures and waterbody banks will be stabilized as soon as possible after construction activities have been completed to prevent sloughing. Stream functions should be quickly restored following restoration activities.

The USACE will usually require compensatory mitigation (e.g., purchase of mitigation credits, development of a site-specific mitigation plan) for loss of "waters of the U.S." greater than 0.10 acre. The proposed waterbody crossings do not represent a loss of "waters of the U.S." and therefore, Algonquin does not propose to provide any compensatory mitigation.



# 5.0 REFERENCES

Environmental Laboratory. (1987). "Corps of Engineers wetlands delineation manual," Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS., NTIS No. AD A176 912.

# APPENDIX N

COMMON WILDLIFE SPECIES OFTEN ASSOCIATED WITH THE VEGETATIVE COVER TYPES FOUND WITHIN THE PROJECT AREA

# APPENDIX N

٦	TABLE N-1					
Common Wildlife Species Often Associated with th					l Project /	Area
Species	Upland Forest	Open Uplands	Forested Wetland	Open Wetlands	Urban	Estuary
Amphibians						
Spotted salamander (Ambystoma maculatum)	Χ	Χ	Χ	Χ		
Red-spotted newt (Notophtalmus v. viridescens)	Χ	Χ	Χ	Χ		
Northern-dusky salamander (Desmognathus f. fuscus)	Х		Χ			
Redback salamander (Plethodon cinereus)	X		Χ			
Four-toed salamander (Hemidactylium scutatum)			Χ			
Northern two-lined salamander (Eurycea b. blislineata)	Χ		X			
Eastern American toad (Bufo a. americanus)	Χ	Χ	X	Χ		
Fowler's toad (Bufo woodhousii fowleri)	Χ	Χ	X	Χ		
Gray treefrog (Hyla versicolor)	Χ		Х	Χ		
Northern spring peeper (Pseudacris c. crucifer)	Х		Χ	Χ		
Bullfrog (Rana catesbeiana)	Χ		Х	Χ	Χ	
Green frog (Rana clamitans)			Х	Χ	Χ	
Pickerel frog (Rana palustris)				Χ		
Wood frog (Rana sylvatica)	Χ	Χ	Х	Χ		
Reptiles						
Common snapping turtle (Chelydra s. serpentine)				Χ		X
Common musk turtle (Sternotherus odoratus)				Χ		
Red eared slider (Trachemys s. elegans)				Χ		
Eastern painted turtle (Chrysemys p. picta)				Χ	X	X
Northern water snake (Nerodia s. sipedon)			Х	Χ		
Northern b)rown snake (Storeria d. dekayi)	Х	Χ	Х	Χ		
Northern redbelly snake (Storeria o. occipitomaculata)	Х		Х	X		
Eastern garter snake (Thamnophis s. sirtalis)	Χ	Χ	Х	Χ	Χ	
Northern ringneck snake (Diadophis punctatus edwardsi)	Х		Х			
Northern black racer (Coluber c. constrictor)	Х	Χ				
Eastern milk snake (Lampropeltis t. triangulum)	Х	Χ	Х			
Birds						
Green heron (Butorides striatus)			Х	Χ		X
Black-crowned night-heron (Nycticorax nycticorax)				Χ		X
Yellow-crowned night-heron (Nycticorax violaceus)				X		X
Double-crested cormorant (Phalacrocorax auritus)						X
Mute swan (Cygnus olor)				Χ		X
Canada goose (Branta canadensis)				Χ	X	X
Brant ( <i>Branta bernicula</i> )				Χ	X	X
Wood duck ( <i>Aix sponsa</i> )			Х	Χ		
American black duck (Anas rubripes)			X	X	X	X
Mallard (Anas playtrhynchos)				X	X	X
Greater scaup (Aythya marila)						X
Lesser scaup (Aythya affinis)						X

Common Wildlife Species Often Associated with	the Vegetative	e Cover Type	es Found W	ithin the AIM	l Project	Area
Species	Upland Forest	Open Uplands	Forested Wetland	Open Wetlands	Urban	Estuary
Bufflehead (Bucephala albeola)						Х
Common goldeneye (Bucephala clangula)						X
Gadwall (Anas strepera)						X
Black vulture (Coragyps atratus)	Χ	Χ	Χ	X		
Turkey vulture (Cathartes aura)	X	Χ	X	Χ		
Broad-winged hawk (Buteo platypterus)	X		X			
Red-tailed hawk (Buteo jamaicensis)	Χ	Χ	X			
Ruffed grouse (Bonasa umbellus)	Χ	Χ	X			
Wild turkey (Meleagris gallopavo)	Χ	Х	Χ			
Clapper rail (Rallus longirostris)				X		Х
Virginia rail (Rallus limicola)				X		Х
Common moorhen (Gallinula chloropus)				X		Х
Willet (Tringa semipalmata)				Χ		Х
Greater yellowlegs (Tringa melanoleuca)				X		Х
Lesser yellowlegs (Tringa flavipes)				X		Х
Semipalmated sandpiper (Calidris pusilla)				Χ		X
Least sandpiper (Calidris minutilla)				Χ		X
Dunlin (Calidris alpine)				Χ		X
Short-billed dowitcher (Limnodromus griseus)				Χ		X
Black-bellied plover (Pluvialis squatarola)				Χ		X
Semipalmated plover (Charadrius semipalmatus)				X		х
Killdeer (Charadrius vociferus)		Х			X	X
Spotted sandpiper (Actitis macularia)			Х	Χ		
Wilson's snipe (Gallinago delicate)		Х		X		
American woodcock (Scolopax minor)	Χ	Х	Х	Χ		
Ring-billed gull (Larus delawarensis)					Х	Х
Herring gull (Larus argentatus)					X	X
Great black-backed gull (Larus marinus)					Х	Х
Rock pigeon (Columba livia)					Х	
Mourning dove (Zenaida macroura)	Χ	Х	Х		Х	
Black-billed cuckoo (Coccyzus erythropthalmus)	Χ	Χ		Χ		
Yellow-billed cuckoo (Coccyzus americanus)	Χ	Х	Х			
Eastern screech-owl (Otus asio)	Χ		Х			
Great horned owl (Bubo virginianus)	Х	Х	Х	Χ		
Chimney swift (Chaetura pelagica)		Х			Х	
Ruby-throated hummingbird ( <i>Archilochus colubris</i> )	Х	Х	Х			
Belted kingfisher ( <i>Ceryle alcyon</i> )				X		Х
Red-bellied woodpecker ( <i>Melanerpes carolinus</i> )	Х		Х			
Downy woodpecker ( <i>Picoides pubescens</i> )	X	Х	X			
Hairy woodpecker ( <i>Picoides villosus</i> )	X		X			
Northern flicker (Colaptes auratus)	X	Х	X			

Common Wildlife Species Often Associated with	the Vegetative	e Cover Type	es Found W	ithin the AIN	I Project	Area
Species	Upland Forest	Open Uplands	Forested Wetland	Open Wetlands	Urban	Estuary
Pileated woodpecker (Dryocopus pileatus)	Х		Х			
Eastern wood-pewee (Contopus virens)	Χ		Χ			
Acadian flycatcher (Empidonax virescens)	Χ			Χ		
Willow flycatcher (Empidonax trailii)	Χ	Χ		Χ		
Least flycatcher (Empidonax minimus)	Χ		Χ			
Eastern phoebe (Sayornis phoebe)	Χ		Χ			
Great crested flycatcher (Myiarchus crinitus)	Χ		Χ			
Eastern kingbird (Tyrannus tyrannus)	Χ	Χ	Χ			
Tree swallow (Tachycineta bicolor)		Х	Х	X		Х
Northern rough-winged swallow (Stelgidopteryx serripennis)		Х	Х	X		Х
Barn swallow (Hirundo rustica)		Χ	Χ	Χ	Х	X
Blue jay (Cyanocitta cristata)	Χ	Χ	Χ			
American crow (Corvus brachyrhynchos)	Χ	Χ	Χ	Χ	Х	
Fish crow (Corvus ossifragus)	Χ	Χ	Χ	Χ	Х	
Common raven (Corvus corax)	Χ		Χ			
Black-capped chickadee (Parus atricapillus)	Χ	Χ	Χ			
Tufted titmouse (Parus bicolor)	Χ		Χ			
White-breasted nuthatch (Sitta carolinensis)	Χ		Χ			
House wren (Troglodytes aedon)	Χ	Χ	Χ			
Marsh wren (Cistothorus palustris)				X		
Carolina wren (Thryothorus Iudovicianus)	Х	Х	Х			
Gold-crowned kinglet (Regulus satrapa)	Х		Х			
Blue-gray gnatcatcher (Polioptila caerulea)	Χ	X	Х	X		
Eastern bluebird (Sialia sialis)	Χ	X	Х			
Veery (Catharus fuscescens)	Χ	X	Х			
Wood thrush (Hylocichla mustelina)	Χ		Х			
American robin (Turdus migratorius)	Χ	Χ	Χ	Χ		
Gray catbird (Dumetella carolinensis)	Χ	Χ	Χ	Χ		
Northern mockingbird (Mimus polyglottos)		Χ			Х	
Brown thrasher (Toxostoma rufum	Χ	Χ	Χ			
Cedar waxwing (Bombycilla cedrorum)	Χ	Χ	Χ	Χ		
European starling (Sturnus vulgaris)	Х	Х			Х	
Yellow-throated vireo (Vireo flavifrons)	Χ		Х			
White-eyed vireo (Vireo griseus)	X	Х	Х	X		
Warbling vireo (Vireo gilvus)	X		Х			
Red-eyed vireo (Vireo olivaceus)	X		Х			
Blue-winged warbler (Vermivora pinus)	X	Х	Х	X		
Yellow warbler (Dendroica petechial)	Χ	Х	Х	X		
Chestnut-sided warbler (Dendroica pensylvanica)		Х	Х	X		
Magnolia warbler (Dendroica magnolia)	X		Χ			

Species	Upland Forest	Open Uplands	Forested Wetland	Open Wetlands	Urban	Estuary
Yellow-rumped warbler (Dendroica coronate)	Х	Х	Х	Х		
Black-throated Green warbler (Dendroica virens)	Χ		Χ			
Pine warbler (Dendroica pinus)	Χ					
Prairie warbler (Dendroica discolor)	Χ	X				
Black-and-white warbler (Mniotilta varia)	Χ		X			
American redstart (Setophaga ruticilla)	Χ		X			
Ovenbird (Seiurus aurocapillus)	Χ		Χ			
Common yellowthroat (Geothlypis trichas)	Χ	Χ	Χ	Χ		
Scarlet tanager (Piranga olivacea)	Χ					
Northern cardinal (Cardinalis cardinalis)	Χ	Х	Х	X		
Rose-breasted grosbeak (Pheucticus Iudovicianus)	Χ		Χ			
Indigo bunting (Passerina cyanea)	Χ	Х				
Eastern towhee (Pipilo erythrophthalmus)	Χ	X	Х	Χ		
Chipping sparrow (Spizella passerine)	Χ	X	Х			
Field sparrow (Spizella pusilla)		X				
Song sparrow (Melospiza melodia)	Х	X	Х	Χ		
Swamp sparrow (Melospiza georgiana)			Х	Χ		
Red-winged blackbird (Agelaius phoeniceus)		X	Х	Χ		
Boat-tailed grackle (Quiscalus major)			Х	Χ		
Common grackle (Quiscalus quiscula)	Χ	X	Х	Χ	Х	
Brown-headed cowbird (Molothrus ater)	Χ	X	Х	Χ		
Orchard oriole (Icterus spurius)	Х		Х			
Baltimore oriole (Icterus galbula)	Х		Х			
House finch (Carpodacus mexicanus)	Х	Χ			X	
American goldfinch (Cardeulis tristis)	X	Х	Х	X		
House sparrow (Passer domesticus)		X			Х	
Mammals						
Virginia opossum (Didelphis virginiana)	Х	X	Х	Χ		
Masked shrew (Sorex cinereus)	Х	X	Х	Χ		
Northern short-tailed shrew (Blarina brevicuada)	Х	X	Х	Χ		
Eastern cottontail (Sylvilagus floridanus)	X	Х	Х	X	Х	
Eastern chipmunk (Tamias striatus)	Х	X	Х		Х	
Woodchuck (Marmota monax)	Х	X				
Gray squirrel (Sciurus carolinensis)	Χ		Х		Х	
Red squirrel (Tamiasciurus hudsonicus)	Χ		Х			
House mouse (Mus musculus)		Х			Х	
White-footed Mouse (Peromyscus leucopus)	Х	Х	Х	X	Х	
Meadow vole (Microtus pennsylvanicus)	Х	Х	Х	X		
Woodland vole ( <i>Microtus pinetorum</i> )	Х	Х	Х			
Norway rat (Rattus norvegicus)					Х	
Muskrat (Ondatra zibethicus)				Χ	X	

TABLE N-1 (cont'd)												
Common Wildlife Species Often Associated with the Vegetative Cover Types Found Within the AIM Project Area												
Upland Open Forested Open Species Forest Uplands Wetland Wetlands Urban Estuary												
Coyote (Canis latrans)	Х	Х	Х	Χ	Х							
Red fox (Vulpes vulpes)	X	Χ	Χ	Χ								
Gray fox (Urocyon cinereoargenteus)	X	Χ	Χ	Χ								
Raccoon (Procyon lotor)	X	Х	Χ	Χ	Х							
Long-tailed weasel (Mustela frenata)	X	Х	Χ	Χ								
Mink (Mustela vison)	X		Χ	Χ								
Striped skunk (Mephitis mephitis)	Х	Х	Х	X								
White-tailed deer (Odocoileus virginianus)	X	X	X	Χ	Х							

# **APPENDIX O**

# MIGRATORY BIRD PRIORITY SPECIES AND ASSOCIATED HABITATS POTENTIALLY LOCATED WITHIN THE AIM PROJECT AREA

# APPENDIX O

	TAI	BLE C	)-1										
Migratory Bird P	riority Species and Associated Ha											a aterfo	
Charles 8	Habitat Tura b	BCR	nd Bi	ras BCR	Shorebirds BCR BCR BCR		ras BCR	Waterbird BCR BCR		ras BCR	BCR	BCR	BCR
Species <sup>a</sup> American avocet (M)	Habitat Type <sup>b</sup> Estuarine emergent marsh	14	28	30	14	28	30	14	28	30 X	14	28	30
American bittern (B)	Palustrine emergent marsh							х	х	x			
	-							^	^	^			
American black duck (B,W)	Estuaries and bays/freshwater lakes, rivers, streams/ palustrine emergent marsh/ forested wetland										Х		Х
American golden plover (M)	Grasslands – agriculture				х		х						
American oystercatcher (B)	Estuarine emergent marsh						x						
American redstart (B)	Deciduous and mixed forests/ mixed forests	х											
American widgeon (W, M)	Freshwater emergent marsh									х			
American woodcock (B)	Shrub-scrub/shrub – early successional/grasslands –				х	x	х						
Atlantic brant (M)	agriculture Estuaries and bays										х		
Bachman's sparrow (B)	Forested upland communities			х									
Bald eagle (B,W)	Freshwater lakes	х	х	х									
Baltimore oriole (B)	Forested upland communities			х									
Bank swallow (B)	Freshwater lakes, rivers, streams	х											
Barn swallow (B)	Palustrine emergent marsh/ grasslands – agriculture/urban –	х											
Barrow's goldeneye (W)	suburban Estuaries and bays/freshwater lakes, rivers, streams			v							х		
Bay-breasted warbler (B)	Forested upland communities			Х									
Bicknell's thrush (B)	Mountaintop forests	Х	Х	Х									
Black rail (B)	Estuarine emergent marsh									Х			
Black scoter (W)	Estuaries and bays										х		Х
Black skimmer (B)	Estuaries and bays									х			
Black-and-white warbler (B)	Forested upland communities			х									
Black-backed woodpecker (B,W)	Coniferous forests	х											
Black-bellied plover (M)	Grasslands – agriculture				х		х						
Black-billed cuckoo (B)	Deciduous and mixed forests	х	х										
Blackburnian warbler (B)	Coniferous forests/mixed forests	х		х									
Black-crowned night heron	Palustrine emergent marsh/							х		х			
(B) Blackpoll warbler (B)	forested wetland Coniferous forests/mountaintop	х											
Black-throated blue warbler (B)	forests Deciduous and mixed forests/ mixed forests	х											
Black-throated green warbler	Coniferous forests/mixed forests	х											

Migratory Bird P	TABLE	,		,	v I oc	ated	Withi	n the	AIM F	Projec	t Area		
inigratory zna i	noney openios and rissosiated his		nd Bii			norebi		1	aterbi			aterfo	owl
Species <sup>a</sup>	Habitat Type <sup>b</sup>	BCR 14	BCR	BCR 30	BCR 14	BCR 28	BCR 30	BCR 14	BCR 28	BCR 30	BCR 14	BCR 28	BCR 30
Blue-winged warbler (B)	Shrub – early successional	X	28 X	X	14	20	30	14	20	30	14	20	30
Bobolink (B)	Grasslands – agriculture	х											
Boreal chickadee (B,W)	Coniferous forests	х											
Boreal owl (W)	Coniferous forests/mixed forests	х											
Broad-winged hawk (B)	Forested upland communities			х									
Brown creeper (B,W)	Coniferous forests/ mixed forests	х											
Brown thrasher (B)	Shrub-scrub		х	х									
•	Forested upland communities			х									
W) Bufflehead (B,W,M)	Estuaries and bays/wooded lakes									x			
Canada goose-NAP (M)	and ponds Estuaries and bays/grasslands –										х		х
Canada warbler (B)	agriculture Shrub-scrub/ deciduous and mixed forests/ coniferous forests/mixed	х	х	х									
Canvasback (W, M)	forests Estuaries and bays/emergent									х			
Cape may warbler (B)	marsh Coniferous forests	х											
Cerulean warbler (B)	Deciduous forests		х	х									
Chestnut-sided warbler (B)	Shrub – early successional	х											
Chimney swift (B)	Deciduous and mixed forests/	х		х									
Clapper rail (B)	urban – suburban Estuarine emergent wetlands									х			
Coastal plain swamp sparrow (B)	Freshwater emergent wetlands									Х			
Common eider (B,W)	Estuaries and bays										х		Х
Common goldeneye (B,W)	Estuaries and bays/ freshwater lakes, rivers, streams/ forested										х		х
Common loon (B,W)	wetland Estuaries and bays/ freshwater							х					
Common nighthawk (B)	lakes, rivers, streams Urban – suburban	х											
Common snipe (B,W,M)	Freshwater emergent wetlands									х			
Common tern (B)	Freshwater lakes							х		х			
Dunlin (W, M)	Beach, sand, mud flat							х		х			
Eastern meadowlark (B,W)	Grasslands – agriculture		x										
Eastern wood-pewee (B)	Deciduous and mixed forests	х											
Eastern kingbird (B)	Grassland communities			х									
Eastern towhee (B,W,M)	Shrub-scrub/shrub – early successional			Х									
Field sparrow (B, M)	Shrub-scrub/shrub – early successional			х									

	TABLE	O-1 (d	cont'd	l)									
Migratory Bird P	riority Species and Associated Ha	bitats	Pote	ential	y Loc	ated	Withi	n the	AIM F	rojec			
			nd Bi		Shorebirds			Waterbirds				aterfo	
Species a	Habitat Type <sup>b</sup>	14	BCR 28	BCR 30	BCR 14	BCR 28	BCR 30	BCR 14	BCR 28	BCR 30	BCR 14	BCR 28	BCR 30
Forster's tern (B, M)	Freshwater emergent wetlands									Х			
Gadwall (B, W, M)	Freshwater emergent wetlands/ freshwater lakes, rivers, streams									Х			
Glossy ibis (B)	Freshwater emergent wetlands									Х			
Golden-winged warbler (B)	Shrub-scrub/shrub – early successional/deciduous and mixed forests		х	Х									
Grasshopper sparrow (B)	Grasslands – agriculture		Х	X									
Gray catbird (B)	Shrub-scrub/shrub – early			х									
Gray jay (B,W)	successional Coniferous forests	х											
Great cormorant (B,W)	Estuaries and bays							х					
Great crested flycatcher (B)	Forested upland communities			х									
Greater scaup (W)	Estuaries and bays										х		х
Greater shearwater (M)	Marine open water									x			
Greater snow goose (M)	Grasslands – agriculture										х		
Greater yellowlegs (W, M)	Beach, sand, mud flat						х						
Green-winged teal (B,W,M)	Freshwater emergent wetlands			x									
Harlequin duck (W)	Freshwater lakes										х		x
Henslow's sparrow (B)	Estuarine emergent wetlands/ grassland communities			х									
Herring gull (B,W)	Estuaries and bays/ freshwater							х					
Hooded merganser	lakes, rivers, streams Forested wetland communities			х									
(B,W,M) Horned grebe (W)	Estuaries and bays							х		x			
Horned lark (B)	Grasslands – agriculture	х											
Ipswich savannah sparrow (B)	Grasslands – agriculture	х		х									
Killdeer (B)	Grasslands – agriculture/urban –				х		х						
King rail (B, W)	suburban Estuarine emergent wetlands									х			
Least bittern (B)	Palustrine emergent marsh					х	х						
Least sandpiper (M)	Palustrine emergent marsh				х		х						
Least tern (B, M)	Beach, sand, mud flat						х						
Lesser scaup (W, M)	Freshwater lakes, rivers, streams									x			
Lesser yellowlegs (W, M)	Beach, sand, mud flat						x						
Little blue heron (B, W)	Freshwater emergent wetlands/									x			
Loggerhead shrike (B)	forested wetland communities Grassland communities			x									
Long-eared owl (B)	Coniferous forests/mixed forests	х											

	TABLE	O-1 (	cont'd	)									
Migratory Bird P	riority Species and Associated Ha	abitats	s Pote	entiall	ly Loc	ated	Withi	n the	AIM F	Projec	t Area	a	
		La	nd Bir	rds	Shorebi		rds	W	aterbi	rds	W	aterfo	wl
Species <sup>a</sup>	Habitat Type <sup>b</sup>	BCR 14	BCR 28	BCR 30									
Long-tailed duck (W)	Estuaries and bays				1.7		- 00	1.7			Х		Х
Louisiana waterthrush	Freshwater rivers, streams/forests		x	x									
Mallard (B, W, M)	Freshwater emergent wetlands/ forested wetland communities												x
Marsh wren (M)	Freshwater emergent wetlands			Х									
Nelson's sharp-tailed	Estuarine emergent wetlands			x									
sparrow (B, M) Northern bobwhite (B, W)	Shrub-scrub/shrub – early successional			x									
Northern flicker (B)	Deciduous and mixed forests/ mixed forests	х		x									
Northern gannet (W, M)	Marine open water									Х			
Northern goshawk (B,W)	Coniferous forests/mixed forests	х											
Northern harrier (B)	Palustrine emergent marsh/ grasslands – agriculture	х	x										
Northern parula (B)	Coniferous forests/mixed forests	х											
Northern pintail (W, M)	Estuarine emergent wetlands									x			
Olive-sided flycatcher (B)	Shrub-scrub/coniferous forests/ mixed forests/shrub – early	х	х										
Ovenbird (B)	successional Deciduous and mixed forests/	х											
Palm warbler (B)	mixed forests Shrub-scrub/shrub – early	х											
Peregrine falcon (B)	successional Urban – suburban		х										
Prairie warbler (B)	Shrub-scrub/shrub – early successional		x	x									
Prothonotary warbler (B)	Forested wetland communities			х									
Purple finch (B,W)	Coniferous forests/mixed forests/mountaintop forests	х											
Purple sandpiper (W, M)	Rocky coasts						x						
Red phalarope (M)	Estuaries and bays				х		х	х		х			
Red-breasted merganser (W, M)	Forested wetland communities			х									
	Forested upland communities			Х									
Red-headed woodpecker (B,W)	Grasslands – agriculture/urban – suburban		х	х									
Red-necked grebe (W)	Estuaries and bays							х					
Red-necked phalarope (M)	Marine open water									x			
Red-throated loon (W)	Estuaries and bays							х		х			
Resident Canada goose (B,W) Roseate tern (B)	Freshwater lakes, rivers, streams/ grasslands – agriculture Estuaries and bays							x		x	x		
Rose-breasted grosbeak (B)	Deciduous and mixed forests	х											

Migratory Bird B	TABLE	,		,	ly Loc	atod	\M/i+hi	n tho	AIM E	Projec	ot Aro		
Wilgratory Bird P	Priority Species and Associated Ha	Land Birds Shorebirds				1	aterbii			aterfo	wl		
Species <sup>a</sup>	Habitat Type <sup>b</sup>		BCR	BCR		BCR		BCR	BCR	BCR	BCR		BCR
Royal tern (B)	Beach, sand, mud flat	14	28	30	14	28	30 X	14	28	30	14	28	30
Ruddy duck (W, M)	Freshwater marsh communities									x			
Ruffed grouse (B,W)	Deciduous and mixed forests/ mixed forests/shrub – early successional	х	x										
Rusty blackbird (B)	Forested wetland/shrub-scrub	х		Х									
Saltmarsh sharp-tailed sparrow (B, W, M)	Estuarine emergent wetlands									Х			
Sanderling (W, M)	Beach, sand, mud flat						Х						
Scarlet tanager (B)	Forested upland communities			х									
Sedge wren (B)	Palustrine emergent marsh/ grasslands – agriculture		Х	х									
Semipalmated plover (M)	Beach, sand, mud flat						Х						
Short-bicher (M)	Estuarine emergent wetlands						х						
Short-eared owl (B, M)	Palustrine emergent marsh/ grasslands – agriculture	х	х	х									
Snowy egret (B, W)	Freshwater emergent wetlands									х			
Solitary sandpiper (M)	Freshwater emergent wetlands									x			
Sora (B, M)	Freshwater emergent wetlands									x			
Spotted sandpiper (B, M)	Freshwater lakes, rivers, streams									x			
Swainson's warbler (B)	Forested upland communities			х									
Surf scoter (W)	Estuaries and bays										х		х
Tricolored heron (B)	Freshwater emergent wetlands									x			
Tundra swan – eastern (W,	Marshy lakes and bays									x			
M) Upland sandpiper (B)	Grasslands – agriculture				х	x	х						
Veery (B)	Deciduous and mixed forests/ mixed forests	х											
Vesper sparrow (B)	Grasslands – agriculture	х											
Western sandpiper (M)	Beach, sand, mud flat						х						
Whip-poor-will (B)	Deciduous and mixed forests/ shrub – early successional	х	х	x									
White-rumped sandpiper (M)	Beach, sand, mud flat						х						
White-winged scoter (W,	Marine open water									x			
M) Willet (B)	Grasslands – agriculture				х		x						
Willow flycatcher (B)	Scrub-shrub – early successional			х									
Wilson's phalarope (M)	Freshwater emergent wetlands									x			
Wilson's snipe (B)	Palustrine emergent marsh/ grasslands – agriculture				х								
Wood duck (B)	Freshwater lakes, rivers, streams/ palustrine emergent marsh/										х		х

TABLE O-1 (cont'd)

## Migratory Bird Priority Species and Associated Habitats Potentially Located Within the AIM Project Area

		Land Birds		ds	Shorebirds		Waterbirds			Waterfowl		wl	
Species <sup>a</sup>	Habitat Type <sup>b</sup>	BCR 14	BCR 28	BCR 30	BCR 14	BCR 28	BCR 30	BCR 14	BCR 28	BCR 30	BCR 14	BCR 28	BCR 30
	forested wetland												
Wood thrush (B)	Deciduous and mixed forests/ mixed forests	х	Х	х									
Worm-eating warbler (B)	Forested wetland communities			Х									
Yellow rail (B)	Palustrine emergent marsh							х					
Yellow-bellied flycatcher (B)	Shrub-scrub	х											
Yellow-bellied sapsucker (B)	Deciduous and mixed forests	х											
Yellow-breasted chat (B)	Shrub-scrub		Х										
Yellow-crowned night heron (B, M)	Forested wetland communities			х									
Yellow-throated vireo (B)	Forested upland communities			X									

<sup>&</sup>lt;sup>a</sup> Priority migratory bird species are denoted with their primary season of occurrence: breeding (B), migration (M), and winter (W).

The Habitat Types listed only represent habitats found within or near the Project area. These habitat types are based on the priority species-habitat suites for Atlantic Northern Forest Bird Conservation Region – BCR 14, Appalachian Mountains Bird Conservation Region – BCR 28, and New England/Mid-Atlantic Coast Bird Conservation Region – BCR 30.

# **APPENDIX P**

PUBLIC LANDS, RECREATION, AND SPECIAL INTEREST AREAS CROSSED OR WITHIN 0.25 MILE

# APPENDIX P

			Distance and Direction from Nearest				Affected struction
Facility/County, State	Enter Milepost	Exit Milepost	Point Along Construction Work Area	Name of Area/Ownership	Crossing Length (feet)	Temp.	Perm.b
PIPELINE FACILITIES							
Haverstraw to Stony Poir	•	-					
Rockland County, NY	0.0	0.3	Inside	Harriman State Park/ Palisades Interstate Park Commission	1,666	3.9	0.0
Rockland County, NY	NA	NA	90 feet southeast from milepost (MP) 2.5	Patriot Hills Public Golf club/Town of Stony Point	NA	NA	NA
Rockland County, NY	0.6	1.0	Inside	Cheesecote Mountain/ Town of Haverstraw	2,090	5.3	0.0
Rockland County, NY	0.8	0.8	Inside	Letchworth Village Cemetery/State of New York	185	0.2	0.0
Stony Point to Yorktown	Take-up and	Relay					
Rockland County, NY	0.7	1.3	Inside	Camp Bullowa/Boy Scouts of America, Hudson Valley Council	3,126	7.4	0.0
Rockland County, NY	2.5	2.6	Inside	Harriman State Park/ Palisades Interstate Park Commission	299	0.6	0.0
Rockland County, NY	2.8	3.0	Inside	Simpson Memorial Church, Inc.	1,023	2.6	1.2
Rockland County, NY	3.0	3.0	Inside	Washington- Rochambeau National Historic Trail/ National Park Service and Rockland Riverfront Trails	75	0.2	0.1
Rockland County, NY	3.2	3.9	Inside/River	New York Critical Environmental Areas (CEAs) (Hudson River Crossing)	3,605	0.1	0.8
Westchester County, NY	4.1	4.2	Inside	St. Patrick's Church	158	0.3	0.0
Westchester County, NY	4.4	4.9	Inside	Indian Point Energy Center/Entergy Nuclear Operations, Inc.	2,159	1.9	2.4
Westchester County, NY	4.8	4.8	Inside	Washington- Rochambeau National Historic Trail/ National Park Service	75	0.4	0.2
Westchester County, NY	NA	NA	450 feet south of MP 4.9	Buchanan-Verplanck Elementary School/ Village of Buchanan	NA	NA	NA
Westchester County, NY	5.1	5.1	Inside	Village Park/Village of Buchanan	313	0.7	0.3
Westchester County, NY	5.8	5.8	Inside	Washington- Rochambeau National Historic Trail/ National Park Service	75	0.4	0.0

			TABLE P-1 (	cont'd)			
Public Lands, R	Recreation, a	and Special	Interest Areas C Distance and Direction	rossed by or Within 0.25 Mi	le of the AIM	Acreage	e Affected struction
Facility/County, State	Enter Milepost	Exit Milepost	from Nearest Point Along Construction Work Area	Name of Area/Ownership	Crossing Length (feet)	Temp.	Perm. <sup>b</sup>
Westchester County, NY	5.8	5.9	Inside	Washington- Rochambeau National Historic Trail/National Park Service	75	1.1	0.0
Westchester County, NY	6.7	8.1	Inside	Blue Mountain Reservation/ Westchester County (includes CEAs)	7,089	17.7	0.0
Westchester County, NY	8.4	8.5	Inside	Blue Mountain Reservation/Westchester County (includes CEAs)	380	1.1	0.0
Westchester County, NY	10.6	10.7	Inside	Town of Cortlandt/empty lot	100	0.1	0.0
Westchester County, NY	10.3	10.3	Inside	Catskill Aqueduct/City of New York Bureau of Water Supply	79	0.2	0.0
Westchester County, NY	10.3	10.4	Inside	Catskill Aqueduct/City of New York Bureau of Water Supply	527	2.5	0.1
Westchester County, NY	11.0 11.1 11.9	11.1 11.8 12.3	Inside	Sylvan Glen Park Preserve (Granite Knolls Park West)/Town of Yorktown	6,238	15.6	0.5
Southeast to MLV 19 Take Fairfield County, CT	e-up and Re	<b>4</b> .2	Inside	Ridgewood County Club (private)/Ridgewood County Club, Inc.	1,787	1.4	0.0
E-1 System Lateral Take-	up and Rela	y		•			
New London County, CT	NA	NA	Adjacent on west side of workspace at MP 1.9	Trumbull Cemetery/Town of Lebanon	NA	NA	NA
New London County, CT	2.0	2.2	Inside	Aspinall Recreation Property and Lebanon Elementary School/Town of Lebanon	ty and Lebanon ntary School/Town		0.1
New London County, CT	8.7 8.9	8.9 9.0	Inside	Senator Thomas J. Dodd Memorial Stadium/City of Norwich	1,489	3.1	0.4
New London County, CT	NA	NA	865 feet east of MP 9.1	Bog Meadow Reservoir (state-protected open space)	NA	NA	NA
Line-36A Loop Extension							
Middlesex County, CT	0.5	8.0	Inside	Watrous Park/Town of Cromwell Middle School	1,326	2.5	0.9
Middlesex County, CT	1.1	1.2	Inside	Cromwell Fire District	524	1.0	0.4
Hartford County, CT	NA	NA	63 feet north of MP 1.6	Dividend Pond Open Space/Town of Rocky Hill	NA	NA	NA

			TABLE P-1 (d	cont'd)						
Public Lands, Recreation, and Special Interest Areas Crossed by or Within 0.25 Mile of the AIM Project <sup>a</sup> Distance and Direction from Nearest  Acreage Affe by Construction										
Facility/County, State	Enter Milepost	Exit Milepost	Point Along Construction Work Area	Name of Area/Ownership	Crossing Length (feet)	Temp.	Perm.b			
E-1 System Lateral Loop										
New London County, CT	NA	NA	255 feet east of MP 1.1	Boy Scouts of America/ Mohegan District of the Connecticut Rivers Council	NA	NA	NA			
New London County, CT	1.1	1.1	Inside	Mohegan Tribe of Indians, federally recognized Indian Nation	279	0.4	0.10			
West Roxbury Lateral										
Norfolk County, MA	0.0	0.0	Inside	Canton Street Buffer/ Town of Westwood	38	0.3	0.1			
Norfolk County, MA	0.0	0.1	Inside	Norfolk Golf Club (private)	633	1.3	0.7			
Norfolk County, MA	NA	NA	393 feet east	Wigwam Pond Conservation Area/Town of Dedham	N/	NA	NA			
Norfolk County, MA	NA	NA	115 feet southeast of MP 2.33	Barnes Memorial Park/ Town of Dedham	NA	NA	NA			
Norfolk County, MA	2.4	2.6	Inside	Gonzalez Field/Town of Dedham	634	1.3	8.0			
Norfolk County, MA	NA	NA	1,139 feet northwest of MP 2.7	Charles River Reservation/ Massachusetts Department of Conservation and Recreation (MADCR)	NA	NA	NA			
Norfolk County, MA	3.0	3.7	Inside	Washington- Rochambeau National Historic Trail/National Park Service	3,485	5.8	0.0			
Norfolk County, MA	3.1	3.2	Inside	Mother Brook Reservation/MADCR	53	0.1	0.0			
Norfolk County, MA	2.8	3.1	Inside	Brookdale Cemetery/ Town of Dedham	272	0.4	0.0			
Norfolk County and Suffolk County, MA	NA	NA	610 feet northwest of MP 3.4	Boston United Hand & Hand Cemetery/ Chestnut Hill's Congregation Mishka Tefila			NA			
Suffolk County, MA	NA	NA	8 feet northwest of MP 3.6	Mary Draper Playground/ municipal	NA	NA	NA			
Suffolk County, MA	NA	NA	132 feet northwest of MP 3.7	Grove Street Cemetery/ Jewish Cemetery Association of Massachusetts	NA	NA	NA			
Suffolk County, MA	NA	NA	525 feet east of MP 3.9	Beethoven Elementary School and Playground/ City of Boston	NA	NA	NA			
Suffolk County, MA	4.2	4.3	Inside	Centre Marsh/Algonquin Gas	NA	NA	NA			

			Distance and Direction from Nearest				Affected struction
Facility/County, State	Enter Milepost	Exit Milepost	Point Along Construction Work Area	Name of Area/Ownership	Crossing Length (feet)	Temp.	Perm. <sup>t</sup>
Suffolk County, MA	NA	NA	0 feet east of MP 4.3	West Roxbury Quarry Urban Wild/West Roxbury Crushed Stone, Co./private	NA	NA	NA
Suffolk County, MA	NA	NA	219 feet southeast of MP 5.1	Guy Cammarata Complex/baseball fields	NA	NA	NA
Suffolk County, MA	NA	NA	15 feet southeast of MP 5.0	Roxbury Latin School/ private	NA	NA	NA
Suffolk County, MA	NA	NA	15 feet northeast of MP 5.1	St. Theresa of Avila School/private	NA	NA	NA
ABOVEGROUND FACILITI	ES						
Burrillville Compressor St	ation						
Providence County, RI	NA	NA	1,147 feet south	George Washington State Campground and Management Area	NA	NA	NA
Farmington M&R Station							
Hartford County, CT	NA	NA	Within 120 feet east	State Protected Open Space (planned bike trail)	NA	NA	NA
Multiple Facilities							
New London and Windham Counties, CT	NA	NA	Facilities are within the area	Quinebaug and Shetucket Rivers Valley National Heritage Corridor	NA	NA	NA
Waterbury M&R Station							
New Haven County, CT	NA	NA	6 feet southeast	Formerly Larkin State Park Trail/state-owned property	NA	NA	NA
West Roxbury M&R Statio	n						
Suffolk County, MA	NA	NA	Facility is within the area	Centre Marsh/Algonquin Gas	NA	1.0	1.0

P-4

APPENDIX Q CONSULTATIONS WITH FEDERALLY RECOGNIZED INDIAN TRIBES									

### APPENDIX Q (cont'd)

	TABLE Q-1				
	Consultations with Federally Recognized Indian Tribes for the AIM Project				
Indian Tribe/Date	Comments				
	on of Oklahoma				
5/17/13	Initial outreach letter from Public Archaeology Lab (PAL), on behalf of Algonquin Gas Transmission, LLC (Algonquin).				
10/25/13	PAL provided the archaeological overview/identification survey technical memoranda and the draft Unanticipated Discovery Plan for review.				
11/25/13	Initial consultation letter from the Federal Energy Regulatory Commission (FERC) requesting comments on t Project to ensure that the concerns of the tribes are identified and properly considered in our environmental analysis, and requesting the tribes' assistance in identifying properties of traditional, religious, or cultural importance that may be affected by the Project.				
12/3/13	PAL provided copies of Resource Reports 1 through 12 and associated maps.				
12/23/13	Email to the FERC requesting the tribe be updated to any changes in the event of project changes or inadvertendiscoveries.				
2/4/14	FERC third-party contractor followed up via email to on FERC request for comments/consultation.				
2/24/14	PAL provided draft overview/technical reports for review.				
elaware Tribe	e of Indians				
5/17/13	Initial outreach letter from PAL.				
5/30/13	Letter to PAL requesting information on resources identified and to continue to be consulted.				
7/3/13	Letter to PAL proving information on states and counties where Delaware have historical connection.				
7/22/13	PAL provided request for consultation and maps.				
7/29/13	Letter to PAL indicating no known sites of religious significance and requesting copies of cultural resource surve reports.				
10/25/13	PAL provided the archaeological overview/identification survey technical memoranda and the draft Unanticipate Discovery Plan for review.				
11/5/13	Letter to PAL recommending Phase II investigations for sites within Project corridor.				
11/25/13	Initial consultation letter from the FERC requesting comments on the Project to ensure that the concerns of the tribes are identified and properly considered in our environmental analysis, and requesting the tribes' assistance in identifying properties of traditional, religious, or cultural importance that may be affected by the Project.				
12/3/13	PAL provided copies of Resource Reports 1 through 12 and associated maps.				
12/11/13	Letter to PAL on survey report, indicating that there are no religious or culturally significant sites in the Project area and no objections to the proposed Project.				
2/4/14	FERC third-party contractor followed up via email to on FERC request for comments/consultation.				
2/24/14	PAL provided draft overview/technical reports for review.				
ashantucket	(Western) Pequot Tribal Nation <sup>a</sup>				
5/17/13	Initial outreach letter from PAL, on behalf of Algonquin.				
5/30/13	Email to PAL requesting copies of survey reports when completed.				
10/25/13	PAL provided the archaeological overview/identification survey technical memoranda and the draft Unanticipate Discovery Plan for review.				
11/14/13	Email to PAL requesting name of FERC cultural resources contact.  Email from PAL providing requested contact information.				
11/15/13	Emails to FERC on review of technical memoranda, agreeing with recommendations.				
11/16/13	Emails to FERC on review of technical memoranda, agreeing with recommendations.				
11/22/13	Email to FERC providing review comments on Unanticipated Discovery Plan.				
11/25/13	Initial consultation letter from the FERC requesting comments on the Project to ensure that the concerns of the tribes are identified and properly considered in our environmental analysis, and requesting the tribes' assistance in identifying properties of traditional, religious, or cultural importance that may be affected by the Project.				
12/3/13	PAL provided copies of Resource Reports 1 through 12 and associated maps.				
12/27/13	Email to PAL acknowledging receipt of Resource Reports.				
2/4/14	FERC third-party contractor followed up via email to on FERC request for comments/consultation.				
2/24/14	PAL provided draft overview/technical reports for review.				
3/3/14	PAL provided copies of Resource Reports 1 through 12 and alignment sheets.				
3/12/14	Met directly with FERC to discuss section 106 concerns and procedures.				
6/12/14	Email to FERC on review of progress memo.				

### APPENDIX Q (cont'd)

	TABLE Q-1 (cont'd)				
	Consultations with Federally Recognized Indian Tribes for the AIM Project				
Indian					
Tribe/Date	Comments				
	panoag Indian Tribe				
5/17/13	Initial outreach letter from PAL, on behalf of Algonquin.				
10/25/13	PAL provided the archaeological overview/identification survey technical memoranda and the draft Unanticipated Discovery Plan for review.				
11/25/13	Initial consultation letter from the FERC requesting comments on the Project to ensure that the concerns of the tribes are identified and properly considered in our environmental analysis, and requesting the tribes' assistance in identifying properties of traditional, religious, or cultural importance that may be affected by the Project.				
12/3/13	PAL provided copies of Resource Reports 1 through 12 and associated maps.				
2/4/14	FERC third-party contractor followed up via email to on FERC request for comments/consultation.				
2/24/14	PAL provided draft overview/technical reports for review.				
4/8/14	Letter to FERC indicating that periodic visits by tribal monitors would be required during ground-disturbing activities.				
Mohegan Tribe	a				
5/17/13	Initial outreach letter from PAL, on behalf of Algonquin.				
5/30/13	Email to FERC requesting information on the Project.				
6/18/13	Letter from Algonquin to arrange for meeting.				
6/27/13	Meeting held with Algonquin and PAL.				
8/2/13	Letter from PAL with copy of meeting notes.				
9/25/13	Phone message from PAL regarding upcoming fieldwork schedule.				
10/25/13	PAL provided the archaeological overview/identification survey technical memoranda and the draft Unanticipated Discovery Plan for review.				
11/14/13	Emails with PAL coordinating archaeological testing of a site.				
11/25/13	Initial consultation letter from the FERC requesting comments on the Project to ensure that the concerns of the tribes are identified and properly considered in our environmental analysis, and requesting the tribes' assistance in identifying properties of traditional, religious, or cultural importance that may be affected by the Project.				
12/3/13	PAL provided copies of Resource Reports 1 through 12 and associated maps.				
2/4/14	FERC third-party contractor followed up via email to on FERC request for comments/consultation.				
2/24/14	PAL provided draft overview/technical reports for review.				
3/3/14	PAL provided copies of Resource Reports 1 through 12 and alignment sheets.				
3/12/14	Met directly with FERC to discuss section 106 concerns and procedures.				
Narragansett Ir	·				
5/17/13	Initial outreach letter from PAL, on behalf of Algonquin.				
10/25/13	PAL provided the archaeological overview/identification survey technical memoranda and the draft Unanticipated Discovery Plan for review.				
10/28/13	Telephone call from regarding upcoming field investigations.  Email from PAL advising of mailing sensitivity assessment/scope of work for upcoming archaeological investigations.				
10/30/13	Email from PAL to coordinate archaeological hand testing.				
11/25/13	Initial consultation letter from the FERC requesting comments on the Project to ensure that the concerns of the tribes are identified and properly considered in our environmental analysis, and requesting the tribes' assistance in identifying properties of traditional, religious, or cultural importance that may be affected by the Project.				
12/3/13	PAL provided copies of Resource Reports 1 through 12 and associated maps.				
2/4/14	FERC third-party contractor followed up via email to on FERC request for comments/consultation.				
2/24/14	PAL provided draft overview/technical reports for review.				
3/3/14	PAL provided copies of Resource Reports 1 through 12 and alignment sheets.				
3/12/14	Met directly with FERC to discuss section 106 concerns and procedures.				
4/14/14	Met with PAL to receive information about cultural resource investigations.				

### APPENDIX Q (cont'd)

	TABLE Q-1 (cont'd)				
	Consultations with Federally Recognized Indian Tribes for the AIM Project				
ndian Fribe/Date	Comments				
Saint Regis Mo	hawk Tribe				
5/17/13	Initial outreach letter from PAL, on behalf of Algonquin.				
10/25/13	PAL provided the archaeological overview/identification survey technical memoranda and the draft Unanticipated Discovery Plan for review.				
11/25/13	Initial consultation letter from the FERC requesting comments on the Project to ensure that the concerns of the tribes are identified and properly considered in our environmental analysis, and requesting the tribes' assistance in identifying properties of traditional, religious, or cultural importance that may be affected by the Project.				
12/3/13	PAL provided copies of Resource Reports 1 through 12 and associated maps.				
2/4/14	FERC third-party contractor followed up via email to on FERC request for comments/consultation.				
2/24/14	PAL provided draft overview/technical reports for review.				
Stockbridge-M	unsee Community Band of Mohican Indians				
5/17/13	Initial outreach letter from PAL, on behalf of Algonquin.				
5/29/13	Letter to PAL indicating tribe is not aware of cultural resources in the Project area.				
10/25/13	PAL provided the archaeological overview/identification survey technical memoranda and the draft Unanticipated Discovery Plan for review.				
11/25/13	Initial consultation letter from the FERC requesting comments on the Project to ensure that the concerns of the tribes are identified and properly considered in our environmental analysis, and requesting the tribes' assistance in identifying properties of traditional, religious, or cultural importance that may be affected by the Project.				
12/3/13	PAL provided copies of Resource Reports 1 through 12 and associated maps.				
2/4/14	FERC third-party contractor followed up via email to on FERC request for comments/consultation.				
2/24/14	PAL provided draft overview/technical reports for review.				
Vampanoag Tr	ibe of Gay Head (Aquinnah) <sup>a</sup>				
5/17/13	Initial outreach letter from PAL, on behalf of Algonquin.				
7/23/13	Email from PAL to coordinate tribal involvement in field surveys.				
	Email to PAL asking for Spectra/Algonquin and FERC contacts.				
7/25/13	Email from Spectra/Algonquin to coordinate tribal involvement field survey.				
10/25/13	PAL provided the archaeological overview/identification survey technical memoranda and the draft Unanticipated Discovery Plan for review.				
11/25/13	Initial consultation letter from the FERC requesting comments on the Project to ensure that the concerns of the tribes are identified and properly considered in our environmental analysis, and requesting the tribes' assistance in identifying properties of traditional, religious, or cultural importance that may be affected by the Project.				
12/3/13	PAL provided copies of Resource Reports 1 through 12 and associated maps.  Call to PAL to discuss investigations.				
12/4/13	Meeting with PAL to discuss Project, permitting process, and schedule.				
1/27/14	Letter from PAL providing copy of meeting notes.				
2/4/14	FERC third-party contractor followed up via email to on FERC request for comments/consultation.				
2/24/14	PAL provided draft overview/technical reports for review.				
3/3/14	PAL provided copies of Resource Reports 1 through 12 and alignment sheets.				
3/12/14	Met directly with FERC to discuss section 106 concerns and procedures.				

Participated in mostly weekly calls and/or email updates on on-going cultural resource field investigations with FERC, Algonquin, and Algonquin's cultural resources contractor beginning April 3, 2014 until cultural resource field investigations were completed.

# APPENDIX R REFERENCES AND CONTACTS

#### APPENDIX R REFERENCES AND CONTACTS

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# APPENDIX S LIST OF PREPARERS

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#### **Federal Energy Regulatory Commission**

#### Suter, Magdalene – Environmental Project Manager, Executive Summary, Proposed Action, Alternatives, Land Use, Socioeconomics, Air Quality and Noise, Reliability and Safety, Cumulative Impacts

B.S., Environmental Systems Engineering, 2004, Pennsylvania State University

#### Kochhar, Medha – Deputy Project Manager, Alternatives, Land Use

Ph.D., Plant Ecology, 1974, North Carolina State University

M.S., Botany, 1968, B.I.T.S., Pilani, India

B.S., Biology and Chemistry, 1966, University of Delhi

#### Howard, Eric - Cultural Resources

M.A., Anthropology, 1997, University of Tennessee

B.A., Anthropology, 1992, University of Tennessee

#### Rana, Tony - Soils, Geology, Groundwater Resources

B.S., Geology, 1984, New Jersey City University

Graduate Studies, International Development, 2009-present, Tulane University Payton Center for International Development

Graduate Studies, Hydrogeology and Geochemistry, 1985-1988, Oklahoma State University

### Wachholder, Joanne – Water Resources, Wetlands, Vegetation, Wildlife and Aquatic Resources, Special Status Species

M.S., Crop and Soil Sciences/Environmental Toxicology, 1997, Michigan State University B.S., Environmental Biology, 1994, University of Wisconsin, Stevens Point

#### Natural Resource Group, LLC

#### Buchanan, Stu – Principal

B.S., Wildlife Management, 1974, University of Maine

A.A.S., Forestry, 1972, Paul Smith's College

### Lee, Jennifer – Project Manager, Quality Assurance Review, Introduction, Project Description, Land Use

B.A., Environmental Studies and Geography, 1995, University of St. Thomas

#### Baltzersen, Wendy – Wildlife and Aquatic Resources, Special Status Species

Ph.D., Fish and Wildlife Biology and Management, 2011, State University of New York, College of Environmental Science and Forestry

M.S., Fish and Wildlife Biology and Management, 2003, State University of New York, College of Environmental Science and Forestry, New York,

B.A., Zoology, 1994, Oregon State University

#### Enright, Troy - Air Quality and Noise

B.S., Environmental Science, 2005, University of Wisconsin, River Falls

#### Grissom, Lindsay – Reliability and Safety

M.S., Cell and Molecular Biology, 2002, Tulane University

B.S., Zoology/Physiology, 2000, Louisiana State University

#### APPENDIX S LIST OF PREPARERS (cont'd)

#### **Hubner**, **Dan** – **Land** Use

B.S., Environmental Studies, 2007, Portland State University

#### Jones, DeeAn – Vegetation

B.S., Wildlife and Fisheries Biology, 1993, University of California at Davis

#### **Koester, Mike – Reliability and Safety**

B.S., Environmental Management, 2001, University of South Alabama

#### Lyons, Tina – Quality Assurance Review, Technical Editor

B.S., Genetics and Cell Biology, 1999, University of Minnesota, Twin Cities

B.S., Ecology, Evolution, and Behavior, 1996, University of Minnesota, Twin Cities

#### Mash, Lisa – Socioeconomics, Cumulative Impacts

B.S., Marine Biology, 1995, University of South Carolina at Columbia

#### Nunley, Janet – Water Resources, Wetlands

M.S., Interdisciplinary Ecology, 2002, University of Florida

B.S., Zoology, 2000, University of Florida

#### **Robblee, Pat – Alternatives**

M.A., Anthropology with a specialization in Historical Archaeology, 1995, College of William and Mary

B.A., Anthropology, 1993, University of Massachusetts at Amherst

#### Thomas, Brian - Cultural Resources

J.D., 2013, Georgia State University College of Law

Ph.D., Anthropology, 1995, State University of New York at Binghamton

M.A., Anthropology, 1991, Wake Forest University

B.A., History and Philosophy, 1983, Wofford College

#### Thornton, Andrea - Geology, Soils

B.A., Environmental Geology, 2006, Northeastern University

B.A., Environmental Studies, 2006, Northeastern University

#### Timpson, Mike – Water Resources, Wetlands

Ph.D., Plant and Soil Science, 1992, University of Tennessee

M.S., Soil Science, 1985, North Dakota State University

B.S., Natural Resources, 1982, University of Rhode Island